

PHYSALIS IN MEXICO, CENTRAL AMERICA AND THE WEST INDIES

U. T. WATERFALL

Continued from Vol. 69, No. 777

33. *Physalis tehuacanensis* Waterfall, sp. nov.

Herba, perennis, 22-27 cm alta; trichomatibus articulatis, partim capitato-glanduliferis, ad 1.5-2 mm longis; foliis ovatis vel deltoideo-ovatis, inaequaliter magno-dentatis vel sinuato-dentatis, principalibus 12-30 mm longis et 12-30 mm latis, petiolis 12-35 mm longis; calycibus floriferis 5-6 mm longis et 4-5 mm latis, lobis lanceolatis vel ovato-lanceolatis 2-2.5 mm longis; pedicellis 4-6 mm longis; corollis luteis, immaculatis, 8-9 mm longis et 10-11 mm latis; antheris luteis, 2.7-3.5 mm longis; filamentis 1.5-3 mm longis; calycibus fructiferis 15-18 mm longis et 14-16 mm latis; pedicellis 8-10 mm longis; baccis 10-11 mm latis.

TYPE: MEXICO: PUEBLA: *Smith, Peterson & Tejeda 3992* (F), Isotype (US), Tehuacan city dump, July 20, 1961.

This species is characterized by the long, coarse, multicellular hairs, intermixed with shorter ones, many of the trichomes tipped with reddish-brown glands, by the coarsely and irregularly dentate leaves, with the hairs of the blade appressed, and especially abundant on the veins, those on the petioles spreading, by the yellow anthers and the yellowish, immaculate (but possibly faded) corolla. It is known only from the type locality in the state of Puebla.

34. *Physalis microphysa* Gray, Proc. Amer. Acad. Arts & Sci. 21: 402. 1886; *P. campanulata* T. S. Brandege, Plantae Mexicanae Purpusianae, IV. Univ. Calif. Publ. Bot. 4: 278. 1912.

Plant herbaceous, several-stemmed from a woody base, the stems 15-60 cm long; herbage rather densely covered with varying lengths of flat, jointed, spreading, tapered hairs, and some capitate-glandular ones, up to 2 mm long, the longer ones often, but not always, the least abundant; leaf blades reniform to ovate or subhastate, the principal ones 12-20 mm long and 10-23 mm wide, rarely smaller, the widest, reniform ones on the lower part of the stems; margins entire, or each side with 1-3 teeth, irregular in shape and size; vestiture of blades more or less appressed, seldom as long as that of the stems; petioles usually 5-12 mm long, but lower ones up to 6 cm long, abruptly expanding onto the blade; flowering calyx bristly hairy, 4-6 mm long and 4-6 mm wide at base of lobes, divided one-half

to two-thirds of its length into lanceolate, slightly acuminate, lobes; corolla white with a slight yellowish or greenish tinge, apparently immaculate, or slightly light-green maculate, 8-10 mm long and 12-20 mm wide when rotate-expanded, more or less pentangular in outline, on pedicels ca. 2 mm long; anthers yellow, ovate to ovate-oblong, 1-1.5 mm long, on slender glabrous filaments 2-3 mm long; fruiting calyx teretish, ovate-oblong to campanulate, 9-12 mm long and 8-12 mm wide, open to open-flaring apically; fruit with thin, dry pericarp, 3-7 seeds in each locule, sessile in the calyx.

SELECTED COLLECTIONS. MEXICO: CHIHUAHUA: limestone ledges, Santa Eulalia Mts., Aug. 14, 1885, *Pringle 317* (Type: GH, Isotypes: BR, F, OKLA, UC, US, VT); limestone, Canyon del Rayo, northern end of Sierra del Diablo, July 25-29, 1941, *Stewart 917* (GH); COAHUILA: near Saltillo, June 1, 1947, *Hinton 16703* (US); arroyo banks, Canyon del Pajarito, Sierra de la Madera, Cuatro Ciénegas, Sept. 6, 1939, *Muller 3158* (UC); SAN LUIS POTOSÍ: *Purpus 5313* (Type of *P. campanulata*: UC, Isotypes: F, GH, US).

35. *Physalis parvianthera* Waterfall, sp. nov.

Planta herbacea, 25-40 cm alta; caulibus villosis, pilis articulatis plus minusve viscidis; foliis deltoideo-ovatis vel ovatis vel lanceolato-ovatis, plus minusve villosis, integerrimis vel paucidentatis, majoribus 25-30 mm longis et 20-30 mm latis; petiolis 10-14 mm longis; calycibus floriferis villosis, 4-5 mm longis et 5-6 mm latis, dentibus ca. 1-1.5 mm longis, lanceolato-attenuatis; pedicellis 3-5 mm longis; corollis luteis, immaculatis, 7-10 mm longis et 15-20 mm latis; antheris violaceis 1.5-1.8 mm longis, filamentis filiformibus; calycibus fructiferis teretibus, parvis, 8-9 mm longis et 5-7 mm latis; pedicellis fructiferis 6-8 mm longis.

TYPE: *Paray 1614* (MEXP) MORELOS: Sierra de Chalchi, cerca de Tepcztlan, Aug. 1955.

The small nearly terete fruiting calyx, immaculate yellow corollas, small violet anthers and soft vestiture characterize *P. parvianthera*. Its nearest relative, *P. microphysa*, has larger yellow anthers, longer calyx lobes, a somewhat sparser, harsher vestiture and usually smaller leaves. The "small-anthered" reference is made in comparison with *P. microphysa*.

36. *P. hederaefolia* Gray, Proc. Amer. Acad. Arts & Sci. 10: 65. 1875.

Herbaceous perennial, 1-5 dm tall, with a varying mixture of long jointed hairs and short trichomes, or with short hairs only, vestiture viscid or not, glandular-capitate or not, rarely partly stellate (a distinguishing characteristic of var. *cordifolia*), antrorse or spreading; leaf blades subreniform to ovate, rarely ovate-lanceolate, mar-

gins coarsely and irregularly salient-dentate to shallowly few-lobed, to undulate or entire, principal ones 20-50 (-80) mm long and 15-40 (-60) mm wide on petioles 10-45 mm long; flowering calyces 5-9 mm long and 4-6 mm wide at base of lobes, upper 2-4 mm divided into deltoid to lanceolate lobes, on pedicels 2-7 (-15) mm long; corolla maculate, obviously to obscurely so, 7-10 mm long and 10-17 mm wide, the limb reflexed when fully expanded; anthers usually yellow, sometimes with a violet tinge, 2-4 mm long, on slightly thickened filaments, 1-5 mm long; fruiting calyx 10-angled or 10-ribbed, varying vestite, 12-25 mm long and 9-17 mm wide on pedicels 5-10 mm long; berry 9-15 mm wide.

36a. var. *hederaefolia*; *P. Palmeri* Gray, *Synoptic Flora* 2(1): 235. 1888.

Vestiture including long, jointed hairs.

SELECTED COLLECTIONS. MEXICO: CHIHUAHUA: plowed field, Sitenapuchi, July 7, 1955, *Pennington 510* (OKLA); COAHUILA: Hermanas, Apr. 20, 1939, *Marsh 1629* (F, GH, OKLA); among shrubs on toboso-flat, 4 km w of San Juan, sw of Sierra de las Cruces, July 11, 1941, *Stewart 810* (GH); along shallow watercourse in desert, 70 miles w of Saltillo, Aug. 7, 1957, *Waterfall 13289* (F, MICH, OKL, OKLA, SMU, US); DURANGO: desert, 68 miles sw of Torreon, Aug. 11, 1959, *Waterfall 15389* (OKLA, SMU, US); NUEVO LEÓN: rolling hills, 75 miles s of Laredo, Sept. 17, 1942, *Gentry 6743* (GH, UC, US); SAN LUIS POTOSI: ex convalli San Luis Potosi, in 1877, *Schaffner 401* (NY); SONORA: vicinity of Hermosillo, Mar. 8, 1910, *Rose et al 12537* (GH, NY, US); canyon de la Bellota, Sierra de la Cabellera, Oct. 7-10, 1941, *White 4693* (MICH); TAMAULIPAS: in canyon 4 km w of Miquihuana, Aug. 4, 1941, *Stanford et al 674* (OKLA, US, not the GH duplicate).

36b. var. *puberula* Gray, *Proc. Amer. Acad. Arts & Sci.* 10: 65. 1875.

Short-vestite; with short antrorse hairs only, or with varying amounts of glandular-capitate trichomes.

SELECTED COLLECTIONS. MEXICO: CHIHUAHUA: rocky hills near Chihuahua, May 21, 1885, *Pringle 15*, (BM, BR, F, GH, MICH, NY, UC, US, VT); gravel desert with *Larrea & Fouquieria*, 30 miles s of Chihuahua, Aug. 8, 1956, *Waterfall 12486* (F, MICH, OKLA, S, SMU, US); calcareous stony hillside, 11 miles n of Parral, *Waterfall 12509* (F, MICH, OKLA, SMU, US); stony grassland, 148 miles s of Ciudad Juarez, Aug. 8, 1961, *Waterfall 16092* (BM, F, GH, MICH, NY, OKLA, P, S, UC, US, VT); COAHUILA: Torreon, Oct. 13-20, 1898, *Palmer 463* (BM, F, GH, MICH, NY, UC, US); limestone hillside, 10 miles n of Saltillo, Aug. 25, 1961, *Waterfall 16625* (OKLA); DURANGO: Durango and vicinity, April to Nov. 1896, *Palmer 165* (BM, F, GH, NY, UC, US); desert, 68 miles sw of Torreon, Aug. 11, 1959, *Waterfall 15388* (F, OKLA, SMU, UC); stony hillside with grass, cacti and yuccas, 19 miles sw of Durango, Aug. 15, 1959, *Waterfall 15523* (F, MICH, OKLA, SMU, US);

NUEVO LEÓN: arroyo in desert between mountains, 22 miles w of Monterrey, Aug. 10, 1959, *Waterfall 15317* (OKLA); SONORA: Puerto de los Aserraderos, Aug. 4-9, 1940, *White 3224* (GH, MICH); ZACATECAS: near Concepcion del Oro, Aug. 11-14, 1904, *Palmer 318* (GH, NY, US); stony mountainside, 2.2 miles se of Sombrerete, Aug. 15, 1959, *Waterfall 15569* (OKLA, SMU).

36c. var. **cordifolia** (Gray) Waterfall, *Rhodora* **60**: 158. 1958; *P. Fendleri* Gray var. *cordifolia* Gray, *Synopt. Fl. N. Amer.* **2**(1): 395. 1878; *P. Fendleri* Gray, *Proc. Amer. Acad. Arts & Sci.* **10**: 66. 1875.

Varying quantities of stellate hairs, or flat branched trichomes, present, at least on the calyx lobes.

COLLECTIONS SEEN. MEXICO: BAJA CALIFORNIA: 64 miles se of Ensenada, Aug. 26, 1960, *Broder 350* (US).

37. **Physalis glabra** Benth, *Botany of the Voyage of the Sulphur*, 39-40. 1844; *P. hastata* Rydberg, *Mem. Torr. Bot. Cl.* **4**:363. 1895.

Several-stemmed from a woody base, usually herbaceous, sometimes woody, 10-100 cm long, glabrous or nearly so; leaf blades narrowly lanceolate to ovate, sometimes basally lobed or hastate, sometimes undulate-margined or few-toothed, rarely with 5-7 teeth on each margin; blades of principal leaves 20-40 mm long and 7-30 mm wide on petioles 12-25 mm long; flowering calyx 3-5 mm long and 3-5 mm wide on pedicels 10-20 mm long; corollas 7-15 mm long and 9-20 mm wide, reflexed-rotate when fully open, usually yellowish, rarely drying with a bluish tinge (then resembling *P. crassifolia* var. *versicolor*), sometimes with a tendency toward slightly darker spots near base of limb; pedicels 15-30 mm long; anthers yellow, 2-2.5 mm long on rather thick filaments 2-4 mm long; fruiting calyx 10-ribbed, 10-23 mm long; 11-20 mm wide, half-filled by the berry; fruiting pedicels 17-30 mm long.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: islands off the coast and on mainland, San José del Cabo, March-June 1897, *Anthony 353* (F, GH, OKLA, UC); Todos Santos, Jan. 28, 1890, *Brandegge 422* (Type of *P. hastata* Rydb.: UC, Isotype: GH); San José del Cabo, Sept. 14, 1930, *Jones 27313* (BM, GH, NY, UC, US).

38. **Physalis crassifolia** Benth, *Botany of the Voyage of the Sulphur*, 40. 1844; *P. pedunculata* Greene, *Pittonia* **1**:268-269. 1889, non *P. pedunculata* Mart. & Gal. *Bull. Acad. . . . Belgique* **12**:132. 1845; *P. Greenei* Vasey & Rose, *Contr. U.S. Natl. Herb.* **1**:18. 1890; other synonymy under subordinate taxa.

Perennial, usually herbaceous, sometimes woody-stemmed, sometimes flowering and fruiting the first year of growth, hence apparently annual, 10 cm to 4 dm tall; plant variously vestite with few to abundant, usually short hairs often tipped with viscid or oily glands; leaf blades ovate, margins entire or toothed, principal ones (1-) 2-6 (-10) cm long and 1-5 (-7) cm wide on petioles 1-4 (-6) cm long; flowering calyx rarely oblong, 5-9 mm long and 3-5 mm wide, the

deltoid to broadly lanceolate teeth 1-3 mm long; flowering pedicels usually 1-3 cm long; corolla yellow and immaculate, or with slightly darkened spots, rarely bluish, or becoming bluish when dry, 8-30 mm long and 8-20 mm wide when fully expanded, at which time it is reflexed-rotate to funnelform, slightly sinuate-margined; few to numerous trichomes within near top of corolla tube; anthers yellow, 2.5-3.5 mm long, on filaments 4-14 mm long; fruiting calyx 10-ribbed, the ribs usually smooth, sometimes muriculate; fruiting calyx glabrous to somewhat hairy, 1-6 cm long and 8-35 mm wide, on pedicels 5-40 mm long, usually much inflated around the berry.

The disposition of individual collections in this complex, and the concept and delimitation of taxa, present problems not easily solved. *P. crassifolia*, *sens. str.*, is not far removed from *P. glabra* Benth., here retained as a separate species. In the broad sense, some of the collections — those with pedicels shorter than usual — may approach *P. hederifolia* Gray.

Much of the material considered here is perennial, sometimes even becoming shrubby. Some of it reproduces as an annual, or produces flowers and fruit during its first year of growth. Since this difference has been used by some authors as a major one of value for the separation of species, it is not surprising to find annual material described as species under the names *P. Greenei* Vasey & Rose, *P. flava* Wiggins, and *P. filipendula* Brandegees. However, other tropical, or subtropical, plants are known to flower and fruit the first year, with herbaceous stems, then proceed to become more or less woody, and persist as perennials. The author postulates the possibility of such an occurrence in this complex population of Baja California and the adjacent mainland of Mexico. Under such an interpretation, *P. Greenei* would largely be referred to var. *crassifolia* of the following treatment, but some of the material of var. *versicolor* and some of var. *infundibularis*, flowering the first year, would be similar. Therefore the name is not placed under varietal synonymy.

Since *P. Greenei* Vasey & Rose is a substitute name for *P. pedunculata* Greene, non Mart. & Gal., 1845, l.c. supra, it might be pertinent here to comment that the type of *P. pedunculata* Mart. & Gal. (BR, specimen in flower only) ap-

pears to belong to the concept of *Brachistus Pringlei* S. Wats., 1890.

Other notable variation within the species-concept includes the size, shape and color of the corolla, the amount and kind of vestiture, the length of the pedicels, and the size of the fruiting calyx.

In much of the material the corolla is reflexed-rotate when fully expanded, although most of the corollas found on collections are not in this condition. I. M. Johnston proposed his var. *infundibularis* for plants with large, usually funnelform corollas, the vestiture varying greatly. Wiggins proposed the name *P. flava* for somewhat similar material with large yellow corollas and muriculate fruiting calyces. Some of the material referred to var. *infundibularis* may have slightly darkened maculations, only slightly differentiated from the surrounding yellow corolla, but the type material seems to have wholly yellow corollas, as is characteristic of the species-complex. Since *P. flava* seems to represent an extreme with a brighter yellow corolla and less glandular herbage than the type of var. *infundibularis*, but not of the whole population, it is referred to synonymy under that taxon. Many sheets of annual material, with smaller, rotate corollas, have been referred to var. *crassifolia*.

Rydberg proposed the name *P. versicolor* for material with the corolla drying bluish, the leaves thin and toothed, and with extra long pedicels and small calyces. Sometimes material with thick, entire leaves has the corolla drying bluish, and there is intergradation in pedicel-length and calyx-size. Nevertheless, the taxon is retained here in the varietal category. To its synonymy are referred *P. versicolor* var. *microphylla* Rydberg, based on second-growth material probably produced during unfavorable growing conditions, and *P. sonorensis* Standley, a phase usually with a yellow corolla, which has persisted until it has become shrubby.

At first consideration *P. filipendula* Brandegee would appear quite distinct by virtue of its large fruiting calyces. However, it does have the yellow anthers of the *P. crassi-*

folia complex. The corolla exhibits a tendency toward the development of darker maculations, but that occurs elsewhere in the complex. In other species-complexes (*P. virginiana*, *sens. lat.*, for example) there have developed extremes with unusually large fruiting calyces. Nomenclatural recognition has been given to one such development as *P. virginiana* forma *macrophysa* (Rydberg) Waterfall. It is postulated that a similar situation occurs in *P. crassifolia*, *sens. lat.*, the representatives being proposed later in this paper for nomenclatural recognition under the name var. *crassifolia* subvar. *amplifolliatus* (follis: bag, bellows), based on a type obviously related to subvar. *crassifolia*, forma *muriculata* by virtue of the muriculate ribs of the fruiting calyx but including material with smooth ribs such as is present in the type of *P. crassifolia*.

38a. var. **crassifolia**. *P. cardiophylla* Torrey, Bot. Mex. Bound. 153. 1859; *P. crassifolia* var. *cardiophylla* (Torr.) Gray, Synoptic Flora 2(1):235. 1878.

Corolla 8-12 (15) mm long, reflexed-rotate when fully open; flowering calyces usually 4-6 mm long on pedicels from somewhat longer than, to 6-7 times the length of the flowering calyx.

38b. var. **crassifolia** forma **crassifolia**

Ribs of fruiting calyx smooth.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: Cedros Island, March-June 1897, *Anthony 306* (BM, F, GH, NY, UC, US); volcanic rocks, San Quintin, April 7, 1936, *Epling & Stewart sin. num.* (F, NY, US); Valley of Palms, Apr. 8, 1882, *Jones 3726* (BM, MICH, NY, UC, US); Magdalena Bay, Revillagigedo Islands, May 30, 1925, *Mason 1952* (US); abundant on dunes, Bahia Magdalena, *Solis 41* (US); sandy hills and flats 25 miles north of Punta Prieta, April 15, 1931, *Wiggins 5362* (GH, MICH, NY, UC, US); 9 miles east of San Ignacio, Nov. 3, 1946, *Wiggins 11358* (GH, UC, US). SONORA: arroyos and milpas, San Bernardo, Rio Mayo, Feb. 23, 1935, *Gentry 1344* (F, GH, UC); Papago Tanks, Nov. 17, 1907, *MacDougal sin. num.* (US); gravelly bed of arroyo de San Francisco, El Travelo, north of Alamos, *Pennell 19503* (US).

38c. var. **crassifolia** forma **muriculata** (Greene) Waterfall, comb. et stat. nov., *P. muriculata* Greene, Bull. Calif. Acad. 1:209. 1885.

Ribs of fruiting calyx more or less muriculate.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: Cape San Quintin, May 10, 1885, *Greene 5109* (Type of *P. muriculata*: UC, Isotype: US); Cedros Island, April 1, 1897, *Brandegee, sin. num.* (UC); vicinity of Loreto, Nov. 14, 1962, *Carter 4453* (UC); San Quintin, April 7, 1936, *Epling & Stewart, sin. num.* (F, US); sandy wash 5

miles south of Miller's Landing, April 17, 1931, *Wiggins 5401* (GH, MICH, NY, UC, US); sandy arroyo 1.5 miles sw of La Paz, alt. 15 ft., Dec. 2, 1959, *Wiggins 15723* (GH, UC).

38d. var. **crassifolia** subvar. **amplifolliata** Waterfall, subvar. nov.; incl. *P. filipendula* Brandegee.

Calycibus fructiferis magnis, inflatis, 30-35 mm longis et 25-30 mm latis, costis muriculatis vel levibus.

The principal characteristic differentiating subvar. *amplifolliata* from subvar. *crassifolia* is the large, inflated fruiting calyx, about one-fourth filled by the berry; its ribs may be muriculate or not; the corollas may be immaculate, or with slightly contrasting maculations.

TYPE: *E. W. Nelson and E. A. Goldman 7405*, Santa Anita, Jan. 11, 1906, (GH); Isotype (US).

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: *Nelson and Goldman 7405*, type cited above; San José del Cabo, Oct. 4, 1890, *Brandegee sin num.* (type of *P. filipendula*) (UC); San José del Cabo, Jan. 20, 1923, *Jones 24393* (F, GH).

38e. var. **versicolor** (Rydberg) Waterfall, *Rhod.* 60:160. 1958; *P. versicolor* Rydb., *Bull. Torr. Bot. Club* 22:307. 1895; *P. versicolor* var. *microphylla* Rydb., *Bull. Torr. Bot. Club* 22:307. 1895; *P. genuicaulis* A. Nels., *Bot. Gaz.* 47:430. 1909; *P. sonorensis* Standley, *Field Mus. Publ. Bot.* 22:102. 1940.

Flowering calyces usually 3-4 mm long on pedicels 5-10 times their length; corollas similar to those of var. *crassifolia*, in shape and size, yellow to greenish-yellow, sometimes whitish toward their periphery, often drying with a bluish tinge; leaves usually dentate and thin.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: among loose rocks on beach, San Francisco Island, Gulf of California, May 30, 1921, *Johnston 3952* (GH, NY, UC, US); Los Angeles Bay, Nov. 22-Dec. 20, 1887, *Palmer 561* (BM, GH, NY, UC, US); canyon about a mile from beach, 35 miles s of Punta Prieta, Oct. 29, 1946, *Wiggins 11302* (GH, UC, US); CHIHUAHUA: in cultivated field in valley, Guasaremos, Río Mayo, Aug. 5, 1936, *Gentry 2358* (F); SINALOA: annual with thickened corm, wet wash with jungle growth, Imala, Nov. 29, 1939, *Gentry 5090* (GH, MICH, NY); annual on rocky volcanic slope with coastal thorn forest, Cerros de Navachiste about Bahia Topolobampo, Sept. 26-30, 1954, *Gentry 14305* (US); vicinity of Culiacán, April 21, 1910, *Rose et al 14959* (US); SONORA: on malpais hill, Lower Sonoran thorn forest, Bachoco, 12 miles e of Cajeme, Feb. 20, 1937 (Type of *P. sonorensis* Standley), *Gentry 3011* (F); Guaymas, July 1887, *Palmer 94* (Type of *P. versicolor* var. *microphylla* Rydberg: NY; Isolectotypes: GH, UC, US); Guaymas in 1887, *Palmer 622* (Type of *P. versicolor* Rydberg: US, Isotype: GH); embankment in low area near river, 9 miles s of Navajoa, Aug. 17, 1956, *Waterfall 12818* (F,

GH, MICH, NY, OKL, OKLA, P, SMU, US); mesquite-grassland, 9 miles w of La Angostura, Aug. 19, 1941, *White 4018* (GH, MICH, NY, US); grassy Olneya-Prosopis-Cercidium plain, 11 miles e of Willard, between Hermosillo and Colorado, Sept. 5, 1941, *Wiggins & Rollins 298* (GH, MICH, NY, UC, US).

38f. var. *infundibularis* I. M. Johnston, Proc. Cal. Acad. Sci. ser. 4, 12:1156-1157. 1924; *P. flava* Wiggins, Contr. Dudley Herb. 3:73. 1940.

Corolla usually funnelform, sometimes the limb more expanded, usually 15-20 mm long, uniformly yellowish, or with slightly contrasting maculations.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: common on silty flat forming dense oily clumps one to two ft. high, Angel de La Guardia Island, Gulf of California, June 30, 1921, *Johnston 4203* (Type: GH, Isotype: US); Puerto Refugio, Jan. 26, 1940, *Dawson 1026* (MICH); southeast side of Cedros Island, Aug. 16, 1932, *Howell 10692* (GH, US); desert washes and slopes, 5-10 miles n of Catavina, Mar. 7, 1930 (GH, MICH, NY, UC, US).

39. *Physalis Mimulus* Waterfall, sp. nov.

Planta herbacea, glabra; foliis lateovatis vel reniformibus, majoribus 12-40 mm longis et 16-25 mm latis, paucis undulato-dentatis, petiolis 10-32 mm longis; calycibus floriferis 2-2.5 mm longis et ca. 2.5 mm latis; calycis lobis deltoideo-lanceolatis, 0.6-0.9 mm longis; pedicellis 3-6 mm longis; corollis maculatis, 3-4 mm longis et 4-6 mm latis; antheris violaceis, 1-1.3 mm longis, filamentis filiformibus; calycibus fructiferis 10 mm longis et 8-9 mm latis.

TYPE: MEXICO: COLIMA: Socorro Island, March 1889, *C. H. Townsend, s.n.* (US).

The specific name alludes to the resemblance of post-anthesis calyces, and of the broad leaf blades with few, irregular, low, undulate dentations, to certain species of *Mimulus*.

40. *Physalis purpurea* Wiggins, Contr. Dudley Herb. 3:74, pl. 19, figs. 9-10. 1940.

Herbaceous, perennial or persisting annual, erect, branched, 25-75 cm tall, spreading-puberulent, especially on the stems, petioles and pedicels; leaf blades ovate to ovate-deltoid, bases sometimes oblique, rarely cordate, margins coarsely and irregularly dentate to sinuate-dentate; principal blades 2.5-5 cm long and 2-5 cm wide on petioles 2-5 cm long; flowering calyx 4-5.5 mm long and 3-4 mm wide at base of lobes, upper 1-2 mm divided into broadly lanceolate to deltoid lobes, on peduncles 17-25 mm long; corolla violet or purplish, the throat yellowish, hairy within near the top of the tube, reflexed-rotate when fully expanded, 7-11 mm long and 9-13 mm wide; anthers yellow,

1.5-3 mm long, on filaments 4-6 mm long; fruiting-calyx 10-ribbed, 23-30 mm long and 17-24 mm wide, on pedicels 2-4 cm long; berry nearly spheric, 10-18 mm wide.

This species is related to the *P. crassifolia* complex, approaching it through *P. crassifolia* var. *versicolor*. It is probably as distinct in its direction of divergence as is *P. glabra* in a different direction.

COLLECTIONS SEEN. MEXICO: SONORA: Bahia San Carlos, Feb. 8, 1940, *Dawson 1063* (F, MICH); bed of creek, 5 km w of Pilares de Nacozari, Nov. 19, 1939, *Drouet et al 3680* (F); bases of cliffs e of Guaymas, Dec. 3, 1939, *Drouet et al 3841* (F, US); bases of cliffs e of Guaymas, Dec. 3, 1939, *Drouet et al 3854* (F, MICH, NY, UC,US); hills w of tannery in shade of shrubs on basaltic slopes, Oct. 21, 1939, *Gentry 4671* (F, GH, MICH, NY, OKLA, UC, US).

41. *Physalis longicaulis* Waterfall, sp. nov.

Planta herbacea, e radice lignosa fusiforme; caulibus procumbentibus glabris vel trichomatibus paucis antrorse adpressis; caulibus 3-9 dm longis; foliis ovatis, principalibus 17-25 (-35) mm longis et 17-24 mm latis, magne et inaequaliter paucidentatis; foliis oppositis; internodis 6-9 cm longis; petiolis 5-15 mm longis; corollis maculatis, 7-10 mm longis et 8-12 mm latis; pedicellis 15-25 mm longis; antheris luteis, ca 2.5 mm longis; filamentis filiformibus, 3-5 mm longis; calycibus fructiferis 17 mm longis et 11 mm latis, pedicellis 30 mm longis; baccis ca. 6 mm latis.

TYPE: *C. H. & M. T. Mueller 135*, Diente Canyon, mountains near Monterrey, NUEVO LEÓN, MEXICO July 1933 (F).

This species is peculiar in its small, opposite, or seemingly opposite, leaves, the pairs separated by long internodes, and in the small fruiting calyx.

42. *Physalis Rydbergii* Fernald, Proc. Amer. Acad. Arts & Sci. 35:569. 1900.

Stems herbaceous or woody below, several from a woody root, 15-30 cm tall, covered with short, fine, divergent multicellular hairs, some of them capitate-glandular; leaf blades lanceolate to ovate-lanceolate or rhombic-lanceolate, principal ones 10-15 mm long and 3-7 mm wide, tapering to a petiole 3-8 mm long, both surfaces covered with hairs similar to the stem-hairs, margins subentire, or with 1 to several teeth of varying size and shape; flowering calyx oblong to oblong-campanulate, 4-5 mm long and 2-2.5 mm wide at base of lobes, the upper 1-1.5 mm divided into ovate to deltoid lobes; pedicels 5-7 mm long; corolla yellowish, immaculate, or slightly maculate and fading in drying, 7-9 mm long, 6-8 mm wide, probably wider if fully expanded; anthers yellow, ca. 2 mm long on filaments 3-4 mm long; fruiting

calyx 8-12 mm long and 8-10 mm wide, oblong-ovate, open at the apex, nearly filled by the berry.

COLLECTIONS EXAMINED. MEXICO: SINALOA: Ymala, Sept. 25 to Oct. 8, 1891, *Palmer 1713* (Type: GH, Isotypes: GH, NY, US).

This unique species is still known only from the type collection.

43. *Physalis philadelphica* Lamarck, *Encycl. Méthod. Botanique* 2: 101. 1786; *P. chenopodifolia* Willdenow in L., *Species Plantarum*, ed 4: 1023-1024, 1797, non *P. chenopodifolia* Lamarck, *Tabl. Encycl...* 28. 1793; *P. ixocarpa* Brotero ex Hornemann, *Hortus Regius Botanicus Hafniensis*, Suppl. 26. 1819; *P. aequata* Jacq. f. ex Nees, *Linnaea* 6: 470. 1831; *P. laevigata* Mart. & Gal., *Bull. Acad. . . . Belgique* 12: 131. 1845; *P. philadelphica* Lam. var. *minor* Dunal in DC., *Prodrumus* 13(I): 450. 1852.

Annual, 15-60 cm tall, glabrous to sparsely vestite with short appressed hairs, and, sometimes, long pilose ones; leaf blades 2-7 cm long, ovate to ovate-lanceolate, margins dentate to sinuate-dentate to entire; petioles one-half the length of the blade to equalling it; corolla yellowish, maculate, 10-18 mm wide, rotate-reflexed when fully extended; anthers blue, or yellowish with bluish margins, ca. 3 mm long, usually strongly twisted after dehiscence; fruiting calyx 10-ribbed, 2-3 cm long, often well-filled by the fruit which may be slightly oily at maturity, and is sessile in the calyx; fruiting peduncles 3-8 mm long.

The type of *P. philadelphica* Lamarck, in the Lamarck collections (P), is the same as *P. ixocarpa*. It has a few short hairs on young parts, but does not have long ones.

Rydberg's reference (1896:337) of perennial material to this taxon, which he attempted to differentiate from *P. ixocarpa*, pertains to collections of the variable *P. virginiana* complex of eastern North America. Some of them the author has seen and has referred to var. *subglabrata* (Mac. & Bush) Waterfall.

SELECTED COLLECTIONS. MEXICO: CHIAPAS: Los Lagos, 34 miles se of Comitán, Jan. 17-20, 1952, *Carlson 2228* (MICH, NY, UC); 3 miles e of Teopisca, June 12, 1960, *King 2866* (MICH, NY, UC); CHIHUAHUA: canyon, La Cienegita, Rio Mayo, Sept. 10, 1936, *Gentry 2633* (F, GH, UC, US); 3 miles w of Cd. Camargo, 4000 ft., Aug. 2-5, 1939, *White 2274* (GH, MICH); COAHUILA: La Novia, between Laguna de Leche and Magueyal, Aug. 30, 1941, *I. M. Johnston 8635* (GH); Saltillo, June 1898, *Palmer 325* (GH, NY, US); DISTRITO FEDERAL: Lago de Texcoco, Oct. 21, 1962, *Rzedowski 16273* (OKLA); DURANGO: Durango and vicinity, April to Nov. 1896, *Palmer 288* (BM, F, GH, NY, UC, US); GUERRERO: Rio Balsas, Aug. 26, 1910, *Orcutt 4387* (F);

HIDALGO: Real del Monte, *Berlandier 225* (P); Ixmiquilpan, July 1905, *Rose et al 9068* (NY, US); JALISCO: along lumber road, 11 miles from Atenquique, April 3, 1951, *McVaugh 11743* (MICH); barranca near Guadalajara, June 1886, *Palmer 1* (BM, GH, NY, US); grassland with desert shrubs, 11 miles se of Lagos de Marenno, *Waterfall 13872* (OKLA); MEXICO: in 1865, *Bourgeau 872* (NY, P, US); MICHOACAN: Ario in 1840, *Galeotti 1188*, Type collection of *P. laevigata* Mart. & Gal. (BR, P); Balsas, Huetamo, Mar. 23, 1934, *Hinton 5823* (MICH, NY, US); MORELOS: valley below Cuernavaca, 4000 ft, Sept. 16, 1900, *Pringle 8446* (F, GH, NY, UC, US, VT); NUEVO LEÓN: Rio Santa Catarina, Monterrey, June 17, 1934, *Pennell 16790* (NY, US); wet depression in calcareous desert, 16 miles n of Matehuala, Aug. 21, 1959, *Waterfall 15750* (OKLA, SMU); OAXACA: valley about Cuicatlan, Nov. 3, 1894, *Nelson 1874* (GH, US); Tomellin Canyon, 3500 ft, Dec. 9, 1895, *Pringle 6263* (BM, F, GH, NY, UC, US, VT); PUEBLA: vicinity of San Luis Tultitlanapa, July 1908, *Purpus 3581* (UC); QUERÉTARO: vicinity of Querétaro, in 1912, *Basile 203* (US); SAN LUIS POTOSÍ: region of San Luis Potosí, in 1878, *Parry & Palmer 640* (GH, NY, US); calcareous desert, 74 miles n of San Luis Potosí, Aug. 20, 1959, *Waterfall 15717* (OKLA, SMU); SINALOA: Fuerte, Mar. 27, 1910, *Rose et al 13575* (US); Mazatlán, Jan. 1889, *Wright 1253* (F, GH, UC, US); TABASCO: San Juan Bautista, Jan. 28, 1907, *Collins & Doyle 267* (US); TAMAULIPAS: valley near Miquihuana, Aug. 8, 1941, *Stanford et al 801* (GH, NY, UC); TLAXCALA: Tlaxcala, June 23, 1938, *Balls 4902* (BM, NY, UC, US); VERACRUZ: Orizaba, July 24, 1866, *Bourgeau 2694* (BR, GH, OKLA, P); Cordoba, Aug. 1936, *Matuda 261* (MICH); Jalapa, in 1894, *Smith sin. num.* (MICH). COSTA RICA: Cartago, cultivated, Oct. 6, 1953, *Heiser 3608* (F); EL SALVADOR: in sand along stream, Ahuachapan, Jan. 9-27, 1922, *Standley 20244* (GH, NY, US). GUATEMALA: open slopes in pine-oak forest, e of Quiche, Nov. 20-Dec. 4, 1940, *Grant 657* (F, GH); near Amatitlan, Dec. 29, 1938, *Standley 61335* (F, US); damp thicket, sea level, San Jose, Jan. 30, 1939, *Standley 64015* (F); Coban, April 19, 1941, *Standley 90935* (F). CUBA: Havana, May 7, 1914, *Ekman 734* (NY); HAITI: Massif de la Selle, Port-au-Prince, Feb. 2, 1926, *Ekman 5495* (NY). JAMAICA: Hope Road, Jan. 13, 1898, *Harris 6983* (MICH). NEVIS: Charlestown, Mar. 9, 1959, *Proctor 19451* (GH).

The above citations all refer to var. *philadelphica* forma *philadelphica*. The following is a forma containing plants which develop long jointed hairs in varying abundance, especially about the sepals and pedicels. Not all duplicates of the same collection will exhibit the same degree of density of long hairs, but most collections do not have them in any quantity.

43b. forma *pilosa* Waterfall, forma nov.

Forma *philadelphica* simillima, sed calycibus et pedicellis plus minusve pilosis.

TYPE: *Paul C. Standley 79899* Finca la Alameda near Chimaltenango, GUATEMALA, Dec. 11-22, 1940 (F).

SELECTED COLLECTIONS. MEXICO: CHIHUAHUA: arroyo, Sierra Bajura, Río Mayo, Dec. 28, 1934, *Gentry 1207* (F). GUATEMALA: in field near Antigua, *Melhus & Goodman 3489* (F); *Standley 79899*, type, cited above; Jalapa, Nov. 28, 1939, *Steyermark 32159* (F).

43c. var. *parviflora* Waterfall, var. nov.

Var. *philadelphica* simillima, sed flores minores, corollis 3-5 mm longis et 6-7 mm latis; antheris violaceis, 1.2-1.5 mm longis.

TYPE: partial shade nearly south of Cerro Sanganguey, 12 miles se of Tepic, NAYARIT, Aug. 16-18, 1959, *Feddema 582* (MICH, Isotype: OKLA).

COLLECTIONS EXAMINED. MEXICO: JALISCO: low marshy area about 1 mile w of Ayo el Chico, Aug. 23, 1958, *McVaugh 17219* (MICH); NAYARIT: *Feddema 582*, cited as Type.

43d. var. *immaculata* Waterfall, var. nov.

Var. *parviflora* simillima, sed corollis immaculatis vel subimmaculatis.

TYPE: *U. T. Waterfall 16115* silty flat in desert, 14 miles ne of Parral, CHIHUAHUA, Aug. 10, 1961 (OKLA, Isotypes: GH, US).

COLLECTIONS EXAMINED. MEXICO: CHIHUAHUA: flood plain of Río Conchos near Valle de Zaragosa, May 19, 1955, *Pennington 328a* (OKLA); *Waterfall 16115*, Type, cited above; GUANAJUATO: ditch in cornland, 11 miles se of Salamanca, Aug. 16, 1957, *Waterfall 13907a* (OKLA); JALISCO: stony hilltop in desert scrub, 7 miles se of Lagos de Marenco, Aug. 15, 1957, *Waterfall 13860* (OKLA, SMU); SONORA: Río Bavispe, Colonia Oaxaca, July 25, 1938, *White 672* (GH, MICH); Río Bavispe, June 27-29, 1940, *White 2888* (GH, MICH).

44. *Physalis michoacensis* Waterfall, sp. nov.

Planta herbacea; caulibus multirameis, 1 m altis, puberulis; foliis ovatis vel rhomboideo-ovatis, basi inaequalibus, marginibus integerrimis, majoribus 6-11 cm longis et 3-5 latis, petiolis 3-6 cm longis; calycibus floriferis 3-4 mm longis et 3-4 mm latis ad basim loborum; calycis lobis ovato-lanceolatis vel deltoideo-lanceolatis, 1.5-1.8 mm longis; pedicellis 3-5 mm longis; corollis maculatis vel parvamaculatis, reflexo-rotatis, 8-10 mm longis et 8-9 mm latis, ostiis dense longitrichomatibus; antheris violaceis, 2-2.2 mm longis; calycibus fructiferis subteretibus, 30-25 mm longis et 20-25 mm latis; pedicellis 5-8 mm longis; baccis 8-10 mm latis.

TYPE. *Rogers McVaugh 17931* (MICH, Isotype: OKLA) abundant in partial shade, old lava flows 4 miles nw of Apatzingan, in sparse woodland of *Cordia*, *Amphipterygium*, *Apoplanesia*, elev. 300 m, MICHOACÁN: MEXICO, Sept. 16, 1958.

45. *Physalis angulata* L., Species Plantarum 1: 183. 1753.

Annual, 25-100 cm tall, branched, glabrous or with a few short, antrorsely appressed hairs; leaf blades usually ovate to ovate-lanceolate, narrower in var. *lanceifolia*, usually deeply and irregularly incised-toothed, or undulate-toothed, sometimes entire, principal ones 5-11 cm long and 3.5-8 cm wide, on petioles 4-8 cm long; flowering calyx usually (3-) 4-7 mm long, divided above into deltoid to broadly lanceolate, sometimes slightly acuminate lobes (1.5-) 2-3 mm long, width 2-4 mm at base of lobes, on pedicels 5-10 mm long; corolla immaculate, or with indistinct spots, somewhat hairy on the inside of the tube, 6-12 mm long and 7-12 mm wide when fully expanded; anthers bluish or violet, (1-) 2-2.5 mm long on slender filaments 3-5 mm long; fruiting calyces 10-angled or 10-ribbed, 20-35 mm long and 17-22 mm wide, on pedicels (7-) 10-25 mm long; berry 10-12 mm in diameter on a gynobase ca. 1 mm long.

The concept of *P. angulata* has contained different kinds of plants at different times. Some are incompatible with the current delimitation of the species, while others, based on obvious, but inconsequential variation, have resulted in the description, or reinterpretation, of taxa not retained here.

The specific name itself seems to have resulted in misinterpretation. Some authors have apparently thought it referred to the fruiting calyx, and have separated material with 10-ribbed fruiting calyces. If one considers only the evidence of Linnaeus' intention, as indicated in Species Plantarum itself, it is noted that the specific names are generally taken from a species-characterization, either that of Linnaeus himself, or of one of the cited references. In this case we find "*Physalis ramosissima, ramis angulatis glabris*", indicating that the name refers to the branches, not the fruiting calyx. The first-cited reference is Hortus Cliffortianus which reads "5. *Physalis annua ramosissima, ramis angulosis glabris, foliis dentato-serratis* . . . Crescit in Carolina".

In the herbarium of the Linnaean Society in London (the author is grateful to its director, Mr. O'Grady, for his courtesies) is to be found, as a part of the Linnaean Herbarium, a sheet of *P. angulata* (labelled 247.9). The specimen is nearly entire-leaved, anthers are light blue, fruiting calyx 10-ribbed with the primary ribs larger, flowering pedicels

are 6-12 mm long and fruiting pedicels 15-20 mm long; the fruiting calyx is ca. 30 mm long and 23 mm wide.

The Riksmuseum in Stockholm has in its Linnaean Herbarium a similar specimen, one with entire leaves or with leaves having 1 or 2 teeth on each margin. A notation on the back of the sheet indicates that it was raised in the botanical gardens in Uppsala.

Link in 1821 (*Enumeratio Plantarum Horti . . . Berolinensis*) described *P. dubia* . . . “calycibus demum angulatis pulverulento-subtomentosis . . .” from Brasil. Nees (*Linnaea* 6: 471. 1831) renamed the species *P. Linkiana* based on *P. dubia* Link of which he says “Nomen mutandum erat, ob Physalidem Gm. antiquiorem”. Of the calyx he only says, “sub lente scabriusculus”. Asa Gray (*Proc. Amer. Acad. Arts and Sci.* 10: 64. 1875) transferred the name “*Linkiana*” to the varietal status. In 1891 Otto Kuntze (*Rev. Gen. Plant.* . . . 2: 452) transferred Link’s “*dubia*” to the varietal status under *P. angulata*. In 1962 Stehlé (*Bull. Soc. Bot. France* 109: 28) reduced “*Linkiana*” to the status of a forma under *P. angulata*.

There does not seem to be a type extant to represent *P. dubia* Link. It seems doubtful if a plant described as having calyces “pulverulento-subtomentosis” could belong to the concept of *P. angulata* as characterized either by the two extant collections from the Linnean Herbarium, or by representatives of the population in the eastern United States on which the citation in *Hortus Cliffortianus* was based. The flowering calyces of *P. angulata* vary from glabrous to having varying amounts of short, appressed hairs, but usually these are sparse. It seems possible that *P. dubia* could have referred to material now called *P. Lagascae*. In any event, in the absence of a type to which the name *P. dubia* can be tied, it seems dubious, if a pun is permitted, that it should be assigned to *P. angulata*. Following this course of action, none of the names listed in the preceding paragraph can be used, since they all spring from *P. dubia*. It should be noted, however, that in the varietal and formal category, the name has pertained to the extreme of *P. an-*

gulata with large-toothed leaves. In the following treatment both this and the entire-leafed extreme are considered as var. *angulata*.

45a. *P. angulata* L., var. *angulata*; *P. ramosissima* Miller, Gardener's Dictionary: 12. 1768; *P. capsicifolia* Dunal, in D. C. Prodr. 13(1): 449. 1852; *P. angulata* var. *capsicifolia* (Dunal) Griseb., Kar. 96: 1857; *P. angulata* var. *ramosissima* (Miller) O. E. Schulz, in Urban, Symb. Ant. 6: 143. 1909; *P. angulata* forma *ramosissima* (Miller) Stehlé, Bull. Soc. Bot. France 109: 28. 1962.

Leaves ovate to ovate-lanceolate or oblongish, coarsely and irregularly toothed to entire; flowering calyx usually 4-7 mm long, with lobes 2-3 mm long; corolla usually immaculate, sometimes with indistinct spots, usually 6-12 mm long; anthers usually 2-2.5 mm long.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: San José del Cabo, April 1899, *Grabendorfer sin num* (UC); JALISCO: near Chapala, Oct. 5, 1903, *Rose & Painter 7628* (US); MICHOACÁN: Zarzamora, *Hinton 15035* (F, GH; the US duplicate is *P. philadelphica*); TABASCO: alrededores del Barrio de Santa Cruz, San Juan Bautista, Aug. 13, 1888, *Rovirosa 263* (NY); VERACRUZ: Cordoba, Aug. 1938, *Matuda 2240* (MICH). BRITISH HONDURAS: Jones Bank, Belize River, March 1933, *Lundell 4002* (F, MICH). COSTA RICA: Guapiles, Mar. 12, 1924, *Standley 37388* (US). EL SALVADOR: dry hillside, Laguna de Olomega, Dept. de San Miguel, Feb. 20, 1922, *Standley 21054* (GH, US). NICARAGUA: Bahia de Bluefields Río Escondido, Mar. 26, 1949, *Molina 1990* (F). PANAMA: Changuinola, Jan. 25, 1921, *Carleton 74* (US); San José Island, Jan. 1, 1946, *I. M. Johnston 993* (GH); around Culebra, Nov. 1911, *Pittier 4782* (F, GH, US). ANAGDA: rocky plain, *Britton & Fishlock 1044* (NY). ANTIGUA: near St. John, Feb. 4, 1913, *Rose et al 3257* (NY). BAHAMAS: creek, Andros, June 6, 1890, *Northrop 616* (NY). BARBADOS: Waterford in 1900, *Bovell sin num* (NY). BERMUDA: south road, Aug. 16, 1913, *Collins 280* (GH, NY). CUBA: sand dunes, Laguna de Cortes, Mar. 11, 1911, *Britton & Cowell 9863* (GH, NY); Bayate, Oriente Province, Aug. 1, 1914, *Ekman 2348* (NY); near river s of Havana, June 23, 1914, *Leon 4325* (NY). DOMINICAN REPUBLIC: near Puerto Libertador, Manzanilla Bay, *Howard 9635* (GH, NY). GRENADA: wooded hillside near Victorial, *Proctor 17222* (GH). GUADELOUPE: in 1893, *Duss 2590* (NY). HAITI: Gonave Island, Mar. 3-14, 1920, *Leonard 3065* (GH); Bassin Blue, Apr. 16, 1929, *Leonard 14705* (GH, NY). JAMAICA: Saint Ann's Bay, Mar. 27-30, 1908, *Britton 2484* (NY); Windsor estate, Aug. 22, 1956, *Proctor 10503* (GH). PUERTO RICO: edge of marsh, Mayaguez, March 31, 1913, *Britton 2353* (NY); Cerro Ventana, Vieques Island, Feb. 20, 1914, *Shafer 2983* (NY). ST. CROIX: Catherine's Rest, April 9, 1896, *Ricksecker 361* (NY, UC). ST. KITTS: cane fields, *Britton &*

Cowell 755 (NY). ST. THOMAS: *Eggers 295* (GH, NY). ST. VINCENT: *G. W. Smith 368* (NY). MARTINIQUE: in 1879, *Duss 1930* (NY). TORTOLA: Sea Cow Bay, *Britton 683* (NY). TRINIDAD: *Britton et al 1057* (G).

In attempting to account for another name, it may be of interest to note that *P. Halicacabum* Crantz, Inst. Rei Herb. 367. 1766, is described as “*P. ramosissima ramis angulatis glabris, foliis ovatis dentatis*”, and that under it is “*Beta, Alkekengi indicum glabrum capsicifolia*”. The first phrase seems only slightly modified from Linneaus’ in *Species Plantarum*, and the appended variety is exactly the same. Therefore it seems probable that the name should be included in the synonymy of *P. angulata*, despite its referral to *P. Alkekengi* in *Index Kewensis*.

45b. *Physalis angulata* L., var. *lanceifolia* (Nees) Waterfall, *Rhodora* 60: 163-164. 1958; *P. lanceifolia* Nees, *Linnaea* 6: 473. 1831.

Leaves lanceolate to linear-lanceolate; corolla usually 4-6 mm long; anthers usually 1-2 mm long.

SELECTED COLLECTIONS. MEXICO: CAMPECHE: Palizada, July 25-28, 1939, *Matuda 3867* (GH, MICH, OKLS, US); SINALOA: vicinity of Labradas, Sept. 9, 1925, *Ferris & Mexia 5149* (GH); Mazatlan, Sept. 1932, *Ortega 7074* (F, NS); SONORA: bed of Rio de Sonora, vicinity of Hermosillo, Mar. 5, 1910, *Rose et al. 12421* (US).

46. *Physalis minimaculata* Waterfall, sp. nov.

Planta annua, ramosa; caulibus pubescentibus; foliis ovatis, basi inaequalibus, margine inaequaliter magnodentatis, principalibus 3-5 cm longis et 2-2.5 mm latis, petiolis 2-4 mm longis; calycibus floriferis 3.5-4 mm longis et 3-3.5 mm latis ad basim loborum; calycis lobis 1.5-2 mm longis; pedicellis 4-6 mm longis; corollis minimaculatis, rotatis vel reflexo-rotatis, 7-10 mm longis et 8-9 mm latis; antheris violaceis, oblongis, 2-2.5 mm longis; filamentis crassis; calycibus fructiferis decangulatis, subtilibus, ca. 18 mm longis et 12 mm latis.

TYPE: *Rogers McVaugh 17902* (MICH). MEXICO: MICHOACÁN: bushy annual to 60 cm high, flowers white, old lava flows 4 miles nw of Apatzingan in sparse woodland of *Cordia*, *Amphiteryrium* and *Apoplanesia*, elev. ca. 300 m, Sept. 16, 1958.

47. *Physalis ampla* Waterfall, sp. nov.

Planta herbacea; caulibus glabris vel antrorse paucitrichomatibus; foliis ovatis, integerrimis vel undulato-dentatis; principalibus 4-6 cm longis et 3-4 cm latis; petiolis 3-5 cm longis; calycibus floriferis 4-5 mm longis et 3-4 mm latis ad basim loborum; calycis lobis late ovatis vel deltoideo-ovatis, 1-1.5 mm longis; pedicellis 3-8 mm longis;

calycibus vestitis, pilis antrorsis, articulatis, ca. 1 mm longis; corollis immaculatis, 5-6 mm longis et 4-6 mm latis; antheris violaceis, ca. 1 mm longis; calycibus fructiferis decacostatis, 30-35 mm longis et 25-30 mm latis, glabris vel paucitrichomatibus; pedicellis 5-10 mm longis; baccis 10-12 mm latis.

TYPE: *T. S. Brandegee sin. num.* MEXICO: SINALOA: vicinity of Culiacán, Sept. 12, 1904 (UC); also examined: *Brandegee*, Oct. 10, 1904, vicinity of Culiacán.

This species is characterized by the small corollas, hairy calyces, short pedicels and large, inflated fruiting calyces which are glabrous or have a few hairs, these often growing from the more or less deltoid lamellations on the calyx ribs.

48. **Physalis Lagascae** Roemer & Schultes, in Linnaeus Systema Vegetabilium 4: 679. 1819.

Annual, 10-90 cm tall, stems vestite in varying degrees with jointed hairs up to 2-4 mm long; leaf blades ovate to ovate-lanceolate, often somewhat rhombic and inequilateral at bases, margins entire to irregularly dentate or sinuate; principal blades 2-4 cm long on petioles 1-3 (-4) cm long; flowering calyx divergently long-hairy, 3-4 mm long and 2.5-3 mm wide at base of calyx lobes, which are nearly deltoid and 0.7-1.5 mm long, pedicels 2-5 mm long; corolla maculate, but the spots usually not strongly contrasting and sometimes apparently immaculate, 5-7 mm long and 5-6 mm wide when fully open, hairy in the tube; anthers bluish or violet, 1.2-1.5 mm long, on filaments ca. 1.5 mm long; fruiting calyx 10-ribbed, the ribs sometimes with projections that appear to be lamellate hair-bases, or with hairs having such bases, sometimes glabrous, 13-20 mm long and 12-20 mm wide on pedicels 3-6 mm long; berry nearly spheric, 6-10 mm wide.

48a. var. **Lagascae**; *P. micrantha* Link, Enumeratio Plantarum Horti . . . Berolinensis 1: 181. 1821-22; *P. parviculea* Blake, Contrib. U. S. Natl. Herb. 24: 20. 1922.

Plant varyingly hairy, often abundantly so on the stem, the hairs persistent.

SELECTED COLLECTIONS. MEXICO: DURANGO: Durango and vicinity, Sept. 1896, *Palmer 622* (BM, F, GH, UC, US); JALISCO: steep rocky hills 2 miles nw of Tequila, Sept. 3, 1960, *McVaugh 18629* (MICH); precipitous mountainsides with arborescent *Ipomoea* above the west end of Lake Chapala, Nov. 8, 1959, *McVaugh 377* (MICH); near farmland, 42 miles e of Guadalajara, Aug. 18, 1959, *Waterfall 15634* (BM, F, MICH, NY, SMU); MICHOACAN: on mountainside above Lake Chapala, near Km 543, Sept. 23, 1958, *McVaugh 18181* (MICH); MORELOS: valleys below Cuernavaca, Sept. 1900, *Pringle 8447* (F, GH, NY, OKLA, UC, US, VT); NAYARIT: steep mountainsides 2 miles ne

of Santa Maria del Oro, Sept. 15, 1960, *McVaugh 19035* (MICH); QUERETARO: silty flats with shrubs and cacti, 8 miles e of Querétaro, Aug. 23, 1961, *Waterfall 16548* (OKLA); SINALOA: stony hillside, 57 miles ne of Mazatlán, Aug. 16, 1956, *Waterfall 12770* (OKLA); ZACATECAS: hills 5 miles sw of Jalpa, Aug. 30, 1960, *McVaugh 18513* (MICH). EL SALVADOR: Cerro de San Jacinto near San Salvador, Feb. 8, 1922, *Standley 20611* (GH, NY, US). GUATEMALA: dry riverbed, Los Amate, Dept. of Izabel, May 9, 1919; Type of *P. parviculea* Blake, *Blake 7318* (GH, US); grassy slopes around Ipala, Oct. 23, 1939, *Steyermark 30334* (F). HONDURAS: vicinity of El Zamorano, April 14, 1949, *Standley 19002* (F). PANAMA: Sabanas, Dec. 2, 1921, *Heriberto 281* (US). MARTINIQUE: in 1899, *Duss 4050* (NY).

48b. var. *glabrescens* Schulz, in *Urban Symbolae Antillanae* 6: 147. 1909.

Similar to var. *Lagascae*, but less hairy, glabrate, the stems with few hairs or none.

SELECTED COLLECTIONS. MEXICO: CHIAPAS: in grassy field, Nov. 27, 1949, *Matuda 17225* (F); GUERRERO: Coyuco-Ziranderangio, May 1, 1934, *Hinton 5928* (NY); MEXICO: Cumbre-Tejupilco, Sept. 6, 1935, *Hinton 8418* (MICH, US); MICHOACAN: Tacupa, Mar. 23, 1934, *Hinton 5821* (BM); VERACRUZ: région d'Orizaba, *Bourgeau 2940* (P); YUCATAN: Chichankanab, *Gaumer 9426* (F, GH, US). COSTA RICA: San Ramon, April 10-16, 1938, *Brenes 22847* (NY). EL SALVADOR: San Salvador, Dec. 20, 1921, *Standley 19662* (GH, NY, US); old corn field, San Vicente, Mar. 2-11, 1922, *Standley 21724* (GH, NY, US); wet forest, Sonsonate, Mar. 18, 1922, *Standley 22363* (GH, US). GUATEMALA: damp field, Zacapa, Oct. 7, 1940, *Standley 73608* (F); damp thicket, Jutiapa, Oct. 24, 1940, *Standley 75631* (F). HONDURAS: gravel stream bed, near El Zamorano, Aug. 13, 1947, *Standley 12177* (F). NICARAGUA: Managua, Aug. 1932, *Garnier 1164* (US); moist thicket, Chichigalpa, July 12, 1947, *Standley 11275* (F). PANAMA: near Matias, Dec. 30, 1923, *Standley 28920* (US). CUBA: Type collection of var. *glabrescens*, *Wright 3636* (GH, US, NY, P); Havana, Sept. 1916, *Leon 6806* (NY); on crotch of tree, Baracoa, ORIENTE, Nov. 30, 1910, *Shafer 7691* (NY).

The usage of the name *P. Lagascae* introduces the question of the identity of *P. minima* L. In *Species Plantarum*, page 183-184, this species follows *P. pubescens* as "8. *Physalis ramosissima*, pedunculis fructiferus folio longioribus. Hort. Cliff. 62. Roy. lugdb. 427. *Solanum vesicarium indicum minimum*. Herm. ludgb. 569. t. 571. *Pee-inota-indien*. Rheed. mal. 10. t. 140. f. 71. Habitat in Indiae aridis sordidis".

There is no *P. minima* in the Linnaean material at Stockholm. Neither is there any in the Hortus Cliffortianus herbarium at the British Museum. Paul Hermann, Horti Academici lugduno-Batavia Catalogus . . . 1679-1686 ("Herm. lugdb.") describes material from Malabar and Ceylon, and has an accompanying illustration showing calyces with spreading hairs. Heinrich van Rhede tot Drakestein, Hortus Malabaricus . . . ("Rheed. mal.") in his tab. 71 shows elongate apiculate fruiting calyces, the upper one-fourth to one-third divided into free, divergent calyx-tips. No hairs are shown on the drawing, but then neither are they for *P. pubescens*, so it is probable that this characteristic simply was not illustrated. It also shows corolla lobes rather deeply incised, but perhaps this is artistic liberty. In any event, it does not resemble anything I have seen.

One might assume that *P. minima* is a *nomen confusum* and that it should be dropped altogether. Or one might conclude that, whatever it is, it refers to Asiatic material, not West Indian and New World. After all, Linnaeus did say "habitat in India" not "in India utraque" which would have intentionally included the West Indies. Furthermore his references are to Asiatic works. True, New World material has been identified as *P. minima*, but it was for this material that *P. Lagascae* was established. Attempting to form a concept of *P. minima* by examining Asiatic material currently so referred is fruitless. In the rather extensive collections at the Kew Herbarium there is under this name material of both *P. angulata* and *P. pubescens*, as well as material with small 10-ribbed fruiting calyces, some of which is very similar to that referred herein to *P. Lagascae*. The elucidation of this material awaits further study.

49. *Physalis microcarpa* Urban & Ekman, in Urban Plantae Haitien-sis, Arkiv for Botanik 21A(5): 59. 1927.

Annual 15-30 (-60) cm tall, slightly branched to much-branched, erect to nearly prostrate, hairs few, short, antrorsely curled; leaf blades ovate or rhombic-ovate to lanceolate, principal ones 25-35 (-45) mm long and 11-30 (-40) mm wide, on petioles 12-45 mm long, their margins usually entire, sometimes slightly and irregularly repand-

dentate, bases sometimes inequilateral, apices often somewhat attenuate; flowering calyces 1.2-2.5 mm long and 1-2 mm wide, divided above into lobes 0.4-0.8 mm long, pedicels 0.5-2 mm long; corolla 2.8-3.5 mm long, immaculate, tube slightly hairy within; anthers 0.3-0.7 mm long, bluish or violet, sometimes yellowish (perhaps due to fading), on filaments 0.5-1.0 mm wide, nearly terete, slightly 10-ribbed, sometimes slightly angled, on pedicels 1.5-4 mm long; fruit 4-6 mm wide.

SELECTED COLLECTIONS. CENTRAL AMERICA: moist sandbar, Metepan, Jan. 29, 1947, *Standley and Padilla 3337* (F). GUATEMALA: brushy rocky slope, Jutiapa, Oct. 24, 1940, *Standley 75090* (F); damp thicket, above Chiquimula, Oct. 14, 1940, *Standley 74334* (F). HONDURAS: weed in field along Río Yeguaré e of El Zamorano, Dec. 10, 1946, *Standley 1465* (F); Tegucigalpa, Nov. 29, 1949, *Standley 24792* (F). HAITI: Jean Rabel, Jan. 27, 1929, *Leonard 21614* (GH, NY). SANTO DOMINGO: Llanura de Vega prope Monte-Cristi, April 3, 1926, *Ekman 5841* (Type: S); common weed in field, Valle del Ciabo, Nov. 4, 1930, *Ekman 16125* (GH, NY).

50. *Physalis acutifolia* (Miers emend. Sandwith) Sandwith, Kew Bull. 14: 232. 1960; *Saracha acutifolia* Miers, Ann. & Mag. Nat. Hist., ser. 2, 3: 449. 1849; *P. Wrightii* Gray, Proc. Amer. Acad. Arts & Sci. 10: 63. 1875.

Annual, nearly glabrous, the few hairs short, stiff, flattish and appressed; leaf blades ovate-lanceolate to linear-lanceolate, principal ones usually 4-12 cm long, on petioles 1.5-7 cm long; leaf margins usually irregularly and often coarsely dentate, sometimes regularly and saliently dentate; flowering calyx usually 4-5 mm long on pedicels 5-12 times its length; corolla light yellow, sometimes with a greenish tinge, rotate with short tube, 15-23 mm wide when fully open, with 5 hairy pads near base of limb alternating with the stamens; anthers usually ca. 3 mm long, yellow with a blue or a blue-green tinge; filaments slender, slightly longer than the anthers; fruiting calyx ca. 2-2.5 cm long and 1.7-2 cm wide, on pedicels 2.5-6 cm long sometimes nearly filled by the fruit.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: east base of Cerro de la Giganta, Oct. 7, 1951, *Carter & Kellogg 3129* (UC); CHIHUAHUA: Candelaria, Oct. 24, 1911, *Stearns, sin. num.* (US); Janos, Aug. 26, 1939, *White 2576* (GH, MICH); SINALOA: Culiacan, Sept. 23, 1904, *Brandege sin num* (UC); rocky volcanic slopes with coastal plain forest, 24 miles n of Los Mochis, Oct. 3, 1954, *Gentry 14409* (US); Elota, Nov. 1925, *Ortega 5633* (GH, US); SONORA: thorn forest 3 miles s of Navajoa, Sept. 16, 1959, *Gentry 17824* (US); Guaymas, in 1887, *Palmer 175* (GH, NY, US); 37 miles w of Hermosillo, Aug. 28, 1941, *Wiggins & Rollins 146* (GH, MICH, NY, UC, US); Horconcos, Río Bavispe, Sept. 5, 1940, *White 3714* (MICH).

It is quite possible that *P. dentata* Dunal in DC. Prodr. 13 (1) : 441-442. 1852, should be referred to this taxon. A photograph, Negative 31435 of the Field Museum of Natural History, shows leaves, large corollas, and post-anthesis nodding calyces, as well as the long pedicels, of *P. acutifolia*. The label only says "Nueva Espana". It was probably collected by Mocino in 1791 on his trip from Tepic to Los Alamos to Aguascalientes.

51. *Physalis sulphurea* (Fernald) Waterfall, comb. nov., *Margaranthus sulphureus* Fernald, Proc. Amer. Acad. Arts & Sci. 35: 566-567. 1900.

Annual, 10-35 cm tall, little-branched above, but sometimes several-stemmed from the base, stems becoming thick, hollow, up to 5-10 mm wide when pressed flat, glabrous, or with a few antrorsely appressed hairs on younger parts, sepals and pedicels; leaf blades ovate to elliptic-lanceolate, principal ones 1.5-6 cm long and 1-4 cm wide, often basally inequilateral and sometimes decurrent into a slightly alate petiole 5-25 mm long, margins entire or irregularly repand-dentate; flowering calyx quadrate to oblong-campanulate, 2-3 mm long and 2-4 mm wide, divided above into deltoid lobes 0.7-1.5 mm long, on pedicels 4-10 mm long; corolla immaculate, or with barely discernible spots, somewhat hairy within the tube, 5-7.5 mm long and 6-8 mm wide, possibly wider if fully expanded; anthers bluish or violet, oblong to ovate, 1-1.5 mm long on filaments 1-2 mm long; fruiting calyces 7-13 mm long, nearly terete or 10-ribbed, thin, the veins obscure, on pedicels (5) 10-15 mm long; berry 5-9 mm in diameter.

In describing *Margaranthus sulphureus*, Fernald cited two collections, *Bourgeau 111* and *Pringle 8215*. The latter, valley of Mexico, alt. 2250 m, Federal District, Oct. 4, 1889 is selected as LECTOTYPE (GH), with a second sheet as ISOLECTOTYPE (GH).

Most of the corollas are unexpanded, but one or two do have the limb expanded. They definitely are not the urceolate corollas of *Margaranthus*, but correspond well to those of *Physalis*.

At one time in the course of this study, the author was of the opinion that *P. Eggersii* O. E. Schulz in Urban, Symbolae Antillanae was synonymous with *Margaranthus sulphureus* Fernald, and consequently annotated a few sheets

of this taxon in several European herbaria as *P. Eggersii*. However, a sheet of the type collection of *P. Eggersii*, Eggers 1057, Water Island prope St. Thomas (P), proves to be not *P. sulphureus*, but appears to be an extreme of *P. Lagascae* var. *glabrescens*.

COLLECTIONS SEEN. MEXICO: DISTRITO FEDERAL: *Pringle* 8215 cited above as type; wet soil, Valley of Mexico, 7300 ft, July 7, 1901, *Pringle* 9426 (GH); JALISCO: west end of Lake Chapala, July 14, 1940, *Hitchcock & Stanford* 7167 (GH, US); MEXICO: orilla de Lagunas de Zumpangos, May 5, 1963, *Cruz-Cisneros* 603 (MEXP); San Juan Citlaltepec, Orillas de la Laguna de Zumpango, 2250 m, May 5, 1963, *Rzedowski* 16000 (OKLA); MICHOACÁN: southeast shore of Lake Patzcuaro, 2200 m, July 15, 1941, *Schery* 130 (MICH, US); LOCALITY UNDETERMINED: *Bourgeau* 111 (BR, OKLA, P, U:), see discussion above; *Schaffner* 362 (P).

52. *Physalis lobata* Torrey, Ann. Lyc. Nat. Hist. New York 2: 226-227. 1828; *Quincula lobata* (Torr.) Raf., Atlantic Journal 1: 145. 1832; *P. sabaena* Buckley, Proc. Acad. Sci Phil. 14: 6. 1863; *Chamaesaracha physaloides* Greene, Bull. Torr. Bot. Club 9: 122. 1882; *Quincula lepidota* A. Nels. Bot. Gaz. 47: 450. 1909.

Perennial, branching from the base, spreading or procumbent; indument of varying amounts of crystalline vesicles, flattening when dried, sparse or abundant enough to give the plant a scurfy appearance; leaf blades ovate-lanceolate to linear-lanceolate, cuneately narrowing to a winged petiole, principal ones usually 4-10 cm long and 0.5-3 cm wide, usually pinnatifid, sometimes sinuate or entire; corollas blue or violet, rotate, 1.5-2 cm broad, with 5 hairy pads alternating with the bases of the filaments; anthers 1.5-2 mm long, yellow, on slender filaments; style twisted and bent to one side; flowering calyx 3-4 mm long, divided into triangular lobes 1.5-2 mm long, on pedicels 1-3 (-5) mm long; fruiting calyx 1.5-2 cm long, pentagonal-ovoid, inflated; fruiting pedicel 1-2.5 (-3) cm long; berry spheric-ovoid, 4-7 mm in diameter, sessile, or essentially so, on the invaginated base of the calyx.

SELECTED COLLECTIONS. MEXICO: CHIHUAHUA: 28 miles s of Camargo, June 21, 1950, *Dressler* 1125 (GH); silty flat in desert, Aug. 9, 1961, *Waterfall* 16110 (OKLA, MICH); 3 miles n of Jiminez, Aug. 1, 1939, *White* 2176 (GH, MICH); COAHUILA: Sabinas, May 21, 1902, *Nelson* 5776 (F, GH, US); Torreon, Oct. 13, 1898, *Palmer* 461 (BM, F, NY, UC, US); SONORA: playa, 2 miles w of Cerro Colorado, n of Sierra Pinacate, Apr. 28, 1951, *Kamb* 2016 (UC); Charco, Feb. 213, 1910, *Lumholtz* 19 (GH); TAMAULIPAS: Nuevo Laredo, June 1935, *Clark* 6623 (NY).

P. lobata reaches the southern limit of its distribution in northern Mexico, extending from southwestern United States, where it is abundant in western Oklahoma, western Texas, New Mexico and parts of Arizona.

53. *Physalis Hintonii* Waterfall, sp. nov.

Herba perennis, 30-55 cm alta; trichomatibus dendriticis, ad 1 mm longis; foliis ovatis, pauci-undulatis, principalibus 5-9 cm longis et 3-6 latis, petiolis 10-35 mm longis; calycibus floriferis 10-16 mm longis et 9-14 mm latis ad basim loborum; calycis lobis deltoideo-ovatis, 5-10 mm longis; corollis maculatis, 13-18 mm longis et 17-20 mm latis; antheris violaceis, 3-4 mm longis; filamentis 3-5 mm longis; calycibus fructiferis pentangulatis, ad apicem apertis, 25-35 mm longis et 18-22 mm latis; baccis ca. 1 cm latis.

P. Hintonii is easily recognized by its spreading dendritic (several-branched) hairs, its large flowering calyx with broad sepals, and its oblongish fruiting calyx usually little constricted, and apically open.

TYPE: *George B. Hinton 8457* (NY), Tejupilco, Dist. of Temascaltepec, Estado Mexico, Sept. 17, 1935; Isotypes (NY, US).

COLLECTIONS SEEN. MEXICO: MEXICO: *Hinton 8457* cited above as type; Tejupilco, Temascaltepec, 1340 meters, Sept. 2, 1933, *Hinton 4686* (NY, US); same location, Aug. 21, 1935, *Hinton 8198* (US); Cumbre, Tejupilco, Temascaltepec, *Hinton 8200* (F, US).

54. *Physalis Greenmanii* Waterfall, sp. nov.

Planta herbacea, 1-2 m alta; trichomatibus articulatis, ad 1-3 mm longis; foliis ovatis, acuminatis vel lunato-acuminatis, cordatis, integerrimis, principalibus 6-10 cm longis et 3.5-6.5 cm latis, petiolis 1.3-5 cm longis; pilis laminis paucis, adpressis; calycibus floriferis 8-10 mm longis et ca. 7 mm latis ad basim loborum; calycis lobis ovatis vel ovato-lanceolatis, attenuatis, 5-7 mm longis; pedicellis 5-10 mm longis; corollis maculatis, 10-14 mm longis et 15-18 mm latis; antheris violaceis, 3-4 mm longis, filamentis filiformibus; calycibus fructiferis pentangulatis, 25-40 mm longis et 25-30 mm latis, calycis lobis longe acuminatis; pedicellis fructiferis 7-10 mm longis; baccis 10-12 mm latis.

P. Greenmanii is characterized by its cordate leaves with few, long and short, strongly appressed hairs, the stem with spreading, more or less intertwined jointed hairs of varying lengths, the longest 1-3 mm long, by the large light — yellow, prominently mottled-maculate corolla, and by its rather large, 5-angled fruiting calyx abruptly narrowed to long-acuminate lobes.

TYPE: *C. G. Pringle 8104* (US), about thicket near Jalapa, 3-6 ft tall, 4000 ft altitude, Veracruz, Mexico, April 27, 1899; Isotypes: (F, GH, MEXP, NY, UC, US, VT).

This must be the collection referred to by Greenman (1900) as *P. glutinosa* when, after describing *P. Pringlei* and citing specimens, he said "From *P. glutinosa* on the other hand, *P. Pringlei* differs in the leaves . . . not cordate." The collection cited above, presumably available to Greenman, was originally labelled "*P. glutinosa* Schlecht.", the identification probably having been based on a reading of Schlechtendal's original description, but the plant not conspecific with the type of *P. glutinosa* and other material so referred in this paper, noting particularly the large, non-reflexed corolla, 20-35 mm long, of the latter species. It is interesting to note that no material in American herbaria has been heretofore correctly referred to *P. glutinosa*, since that species is the same as the one we have called *Cacabus mexicanus* and *Physalis eximia*. Greenman's comparison to his newly described species was pertinent, but since the specimens he thought to be *P. glutinosa* were not that species, they require another name.

55. *Physalis Pringlei* Greenman, Proc. Amer. Acad. Arts & Sci. 35: 311-312. 1900.

Herbs, (45 cm-) 1-1.7 m tall; vestiture of glutinous jointed spreading hairs of varying lengths, some with brownish capitate glands; leaf blades ovate, somewhat narrowed, sometimes unequally so, to the petiole, not cordate, usually 4-8 cm long, each margin with 1-3 irregular teeth or small lobes, or entire, sparsely appressed-hairy, often with more abundant hairs along the veins; petioles usually 1-3 cm long; calyx at anthesis oblong or oblong-flaring, 7-10 mm long and 5-8 mm wide at base of lobes, the upper one-third to one-half divided into ovate to lanceolate, acuminate lobes; corolla yellow, marked with 5 somewhat confluent, strongly darkened areas, with tomentum between these and the point of stamen insertion, usually 15-20 mm long and 18-22 mm wide when fully expanded, slightly rotate-pentangular in outline; anthers bluish, oblong, 2.2-3 mm long on glabrous filaments 3-4 mm long; fruiting calyx ovate to oblong-ovate, 5-angled with intermediate ribs or slight angles, with vestiture similar to stem but more sparse, 2.5-4 cm long and 18-25 mm long and 10-15 mm wide, sessile, or essentially so, on the invaginated base of the calyx.

55a. var. *Pringlei*

Calyx lobes acuminate, often prominently so; leaf margins irregularly sinuate, or with few irregular teeth or small lobes.

SELECTED COLLECTIONS. MEXICO: DISTRITO FEDERAL: Sierra de Ajusco, 8500 ft, Oct. 2, 1895, *Pringle 6216* (BR, F, GH, NY, OKLA, P, UC, US, VT); GUANAJUATO: cliffs, Acambaro, Oct. 6, 1904, *Pringle 13448* (GH, US); JALISCO: rocky outcrop in mountains e of Mamantlan, about 15 miles sse of Autlan, July 30, 1949, *Wilbur 1988* (MICH); MEXICO: near Cima, Sept. 1903, *Rose & Painter 7172* (GH, NY, US); An Angel, al sur del Xitle, Sept. 15, 1952, *Rzedowski 1759* (MEXP); NUEVO LEÓN: upper San Francisco Canyon, 15 miles sw of Pueblo Galena, May 17, 1934, *Mueller 432* (F, GH, MICH); OAXACA: Sierra de Clavellinas, 3-5 ft., 9000 ft alt., Oct. 18, 1894, *Pringle 6001* (Type: GH, Isotypes: BM, BR, NY, UC, US, VT).

55b. var. *curtiloba* Waterfall, var. nov.

A var. *Pringlei* differt calycibus curtioribus, laminis integerrimis.

TYPE: *Edward Palmer 144* (US) San Ramon, DURANGO, Apr. 21 to May 9, 1906, Isotypes: (F, GH, NY, UC).

COLLECTIONS EXAMINED. MEXICO: CHIHUAHUA: canyon slope in pine-oak forest, Arroyo Hondo, Sierra Charuco, Apr. 16-30, 1948, *Gentry 8074* (MICH, UC, US); DURANGO: *Palmer 144* cited above as type; SONORA: vicinity of Alamos, Mar. 19, 1910, *Rose et al 13104* (GH, NY, US).

56. *P. angustiphysa* Waterfall, sp. nov.

Planta herbacea; trichomatibus longis, articulatis, mollibus, divaricatis; foliis ovatis vel late ovatis, inaequaliter paucidentatis, principalibus 4-5 (-10) cm longis et 3-4 (-6) cm latis; calycibus floriferis 3-4 mm longis et 3-4 mm latis ad basim loborum; calycis lobis lanceolatis vel late lanceolatis, 2-2.5 mm longis; corollis luteis, maculatis, 8-9 mm longis et 12-14 mm latis; antheris violaceis 2-2.5 mm longis, filamentis filiformibus, 3-4 mm longis; calycibus fructiferis pentangulatis, 23-27 mm longis et 10-18 mm latis; baccis 10-13 mm longis et 6-8 mm latis.

TYPE: *Julian A. Steyermark 51977* (US). GUATEMALA: lower brushy slopes, La Sierra (Tujimach) across river from San Juan Atitlan, Dept. Huehuetenango, Sept. 8, 1952; Isotypes: (F, US).

COLLECTIONS EXAMINED. MEXICO: MICHOACAN: by stone fence in llano, 1 meter high, Zitacuaro-Coyota, Aug. 25, 1938, *Hinton 13156* (F, MICH, NY); NAYARIT: precipitous mountainsides, *Carpinus-Magnolia* forest, in ravines, 8 miles w of Tepic, Sept. 10, 1960, *McVaugh 18872* (MICH). GUATEMALA: *Steyermark 95177* cited above as Type.

The fruiting calyx is often twice as long as wide. The type collection has long, soft, somewhat tangled, jointed,

spreading hairs. However, McVaugh's collection from Nayarit has larger leaves and less dense vestiture than the type.

57. *Physalis subrepens* Waterfall, sp. nov.

Planta herbacea, 50-60 cm longa; caulibus tenuibus adscendentibus vel procumbentibus, interdum repentibus ad nodis inferioribus; trichomatibus articulatis ad 2 mm longis; foliis ovatis vel late ovatis, acuminatis, interdum subcordatis, paucidentatis vel undulatis vel integerrimis, principalibus 3-8 cm longis et 1.8-6 cm latis; petiolis 22-45 mm longis; calycibus floriferis 7-10 mm longis et 5-7 mm latis ad basim loborum; calycis lobis lanceolatis vel triangularibus, acuminatis, 4-5 mm longis; corollis luteis, maculatis, 9-14 mm longis et 15-20 mm latis; antheris violaceis, 2.7-3 mm longis, filamentis filiformibus, 2.5-3 mm longis; calycibus fructiferis pentangulatis et pentacostatis, 20-28 mm longis et 12-18 mm latis; pedicellis fructiferis 10-20 mm longis; baccis 8-12 mm latis.

TYPE: *C. G. Pringle 13591* (VT) barranca below Trinidad Iron Works, 5500 ft, Hidalgo, Aug. 21, 1905; Isotypes: (F, GH, MICH, OKLA, UC, US).

COLLECTIONS EXAMINED. MEXICO: DISTRITO FEDERAL: Contreras, June 1, 1963, *Galvan s. n.* (MEXP); HIDALGO: Barranca near Honey Station, July 16, 1904, *Pringle 13440* (GH, MICH, US, VT); *Pringle 13591*, Type, cited above; VERACRUZ: Lomogrande, Mount Orizaba, 9300 ft, April 29, 1938, *Balls 4404* (UC).

58. *Physalis volubilis* Waterfall, sp. nov.

Herba perennis; caulibus adscendentibus vel procumbentibus, interdum ad basim lignosis, e radice lignose fusiforme; pilis articulatis ad 1 mm longis; foliis ovatis vel late ovatis, acutis vel acuminatis, saepe cordatis, integerrimis, principalibus 25-50 mm longis et (15-) 20-40 mm latis, petiolis 10-30 mm longis; calycibus floriferis 8-10 mm longis et ca. 5 mm latis ad basim lobis; calycis lobis anguste linearibus, 4-6 mm longis; pedicellis 15-40 mm longis; corollis luteis, maculatis, 12-15 mm longis et 15-25 mm latis; antheris violaceis, 2.5-3.5 mm longis; calycibus fructiferis anguste ovatis, 25 mm longis et 10 mm latis vel 28 mm longis et 15 mm latis; baccis 8-11 mm latis.

TYPE: *Wm. C. Leavenworth 519* (GH), vine, common locally in open pine woods, large tubers on roots, 2 miles above Tancitaroi, 7000 ft, MICHOACÁN, Aug. 10, 1940; Isotypes: (F, MICH, NY).

SELECTED SPECIMENS. MEXICO: MEXICO: Meson Vieja, Dist. Temascaltepec, Apr. 29, 1932, *Hinton 570* (US); MICHOACÁN: procumbent in clearing in oak-pine forest, Zitacuaro-Cacique, 2600 meters, June 6, 1938, *Hinton 11928* (MICH, NY, US); *Leavenworth 519*, Type, cited above; prostrate from a small tuber, runners rooting at nodes, black volcanic ash in pine forest, 3.5 miles n of volcano Paricutín, June 14, 1950, *Turner 1895* (MICH); vine, very common, about 5

miles from Uruapan, Km 63-64 on Mexico 241, Aug. 22, 1949, *White 239* (OKLA).

Physalis volubilis differs from *P. subrepens* by having narrower flowering calyces, longer flowering pedicels (15-40 mm long in *volubilis*, but only 5-12 (-15) mm long in *subrepens*, and usually entire leaves as compared with the usually toothed leaves of the former.

It is possible that *J. Rzedowski 10021* (OKLA) belongs here. It is somewhat atypical, and, collected from "orilla de camino, Potrerillos, Municipio de Xilitla, San Luis Potosí, Feb. 28, 1959," it is well out of the range indicated by the cited collections. However, it may be that it awaits collecting in the intermediate areas.

59. ***Physalis viridoflava*** Waterfall, sp. nov.

Planta perennis e radice lignose fusiforme; caulibus herbaceis, prostratis, breve antrorse vestitis, trichomatibus articulatis; foliis ovatis vel late ovatis, interdum inaequalibus, integerrimis, principalibus 25-35 mm longis et 20-28 mm latis, petiolis 10-24 mm longis; calycibus floriferis 5-7 mm longis et 3-4 mm latis ad basim loborum calycis lobis anguste lanceolatis, attenuatis, 3-5 mm longis, pedicellis 20-35 mm longis; corollis viridoflavis, immaculatis, 10-12 mm longis et 18-20 mm latis; antheris flavis vel viridoflavis, 2.5-3 mm longis, filamentis filiformibus 2.5-3 mm longis; calycibus fructiferis immaturis pentangulatis.

TYPE: *David P. Gregory and George Eiton 99* (MICH), in relatively undisturbed pine forest, on route 110 at km 59-60, 20 miles due wsw of Jiqyilpan, and several miles s of Mazamitla, JALISCO, MEXICO, June 18, 1966; Isotype: (NY).

This species, growing from a fusiform, or thicker, woody root, has long pedicels, greenish-yellow corollas with no evident maculations (collector says "with chocolate-brown circular areas toward center"), anthers yellow or green, (collector says "green") and matted hairs in the throat of the corolla. Only immature fruiting calyces are known, but they are 5-angular.

60. ***Physalis longipedicellata*** Waterfall, sp. nov.

Planta perennis, herbacea, 1 m alta, ramosa; trichomatibus mollibus, articulatis ad 2 mm longis, majoribus 0.3-0.6 mm longis; foliis late ovatis vel lanceolatis, interdum inaequilateris, ad apicem attenuatis; marginis pauci-dentatis vel undulatis vel integerrimis; foliis principalibus 6-10 cm longis et 3-6 cm latis, petiolis 3-6 cm longis,

angustissime alatis; corollis ignotis; calycibus fructiferis pentangulatis, vestitis, 22-26 mm longis et 20-24 mm latis lobis lanceolatis, attenuatis, 6-8 mm longis; pedicellis fructiferis 20-45 mm longis; baccis 1 cm latis.

TYPE: *Rogers McVaugh 13828* (MICH), in pine-oak-fir forests, steep slopes near summits, Sierra de Manantlan near Aserradero el Cuarton, 15-20 miles se of Autlan, JALISCO MEXICO, Nov. 2, 1952; Isotype: (OKLA).

The name refers to the long pedicels as compared with other species having a 5-angled, hairy fruiting calyx.

This large, branched, soft-hairy plant has large leaves, entire, with few shallow undulations, or a few coarse teeth, sometimes only 1 or 2 per leaf; the fruiting calyx is abundantly covered with short hairs intermixed with a few long jointed hairs up to 2 mm long.

61. *Physalis lignescens* Waterfall, sp. nov.

Frutex; trichomatibus brevibus, divaricatis vel antrorse crispis; foliis ovatis vel deltoideo-ovatis, integerrimis vel pauce undulatodentatis, principalibus 3.5-6 cm longis et 2.5-4 cm latis, petiolis 1-2 cm longis; calycibus floriferis 4-6 mm longis et 3.5-6 mm latis ad basim loborum; calycis lobis lanceolatis vel ovato-lanceolatis, 2.5-3 mm longis; pedicellis 8-15 mm longis; corollis luteis, maculatis, 13-16 mm longis et 20-22 mm latis; antheris violaceis, 2-2.5 mm longis, filamentis 4-6 mm longis; calycibus fructiferis (immaturis) 28 mm longis et 15 mm latis; baccis 8-9 mm latis.

TYPE: *Rogers McVaugh 13454* (OKLA), steep mountainsides in pine-oak forest (zone of broad-leaved trees in barrancas), ne slopes of the Nevado de Colima, below Canoa de Leoncito, 2250-2550 meters, JALISCO, Oct. 12, 1952.

SPECIMENS EXAMINED. MEXICO: JALISCO: *McVaugh 13454*, Type, cited above; open pine-covered ridges and slopes in mountains e of Mamantlan about 15 miles sse of Autlan by way of Chante, July 22, 1949, *Wilbur 1776* (MICH).

62. *Physalis jaliscensis* Waterfall, sp. nov.

Frutex; caulibus 1.5-2.5 m. altis, glabris vel pauce brevitrichomatibus ex partis junioribus; foliis ovatis vel lanceolato-ovatis, attenuatis vel lunato-attenuatis, integerrimis vel pauce undulatis, principalibus 6-9 cm longis et 2-5 cm latis, petiolis 1-3 cm longis; calycibus floriferis 8-11 mm longis et 7-10 mm latis ad basim loborum; calycis lobis deltoideis vel lanceolato-deltoideis, ad apicem attenuatis, 4-6 mm longis, pedicellis 20-35 mm longis; corollis luteis, maculatis, 13-15 mm longis et 18-25 mm latis, campanulato-rotatis; antheris violaceis, 3-3.5 mm longis, filamentis 3-3.5 mm longis; calycibus

fructiferis pentangulatis, 25-30 mm longis et 20-26 mm latis, pedicellis 35-45 mm longis; baccis 10-15 mm longis.

TYPE: *Rogers McVaugh 21512* (MICH), fir forest, steep mountainsides and barrancas 1-2 miles n of sawmill "La Cumbre" on the divide above headwaters of Río Mascoto, 25-30 km se of Talpa de Allende, Nov. 29, 1960, Isotype: (OKLA).

SPECIMENS SEEN. MEXICO: JALISCO: *McVaugh 21512*, type, cited above; abundant along lumber road, steep slopes in pine forest, Sierra del Halo, near a lumber road leaving the Colima highway 7 miles ssw of Tecalitlan, 3 miles from highway, Aug. 14, 1957, *McVaugh 16172* (MICH, OKLA).

63. *Physalis maxima* Miller, Gardener's Dictionary, ed 8; no. 15. 1768.

Annual, 0.6-1.5 meter tall; vestiture of short, spreading, more or less viscid hairs, and some capitate-glandular ones, often with larger, longer hairs 1.5-4 mm long on petioles, pedicels and stems; leaf blades ovate, coarsely and irregularly porrect-dentate to sinuate-dentate to entire or with 1 or 2 teeth on each margin; principal blades 6-10 (22) cm long and 4-9 (16) cm wide, bases slightly to strongly unequal, petioles 2-12 cm long; flowering calyces 5-8 mm long, divided into subulate, or subulate-attenuate lobes 3-6 mm long, these often long pilose; flowering pedicels (3-) 10-25 (-75) mm long, often pilose; corollas white or whitish, slightly to moderately maculate, 6-8 mm long and 10-15 mm wide when fully open, tube hairy within; anthers slightly bluish-tinged or wholly yellow, 2.5-3 mm long, on slender filaments 2.5-4 mm long; fruiting calyx strongly 5-angled, 40-60 mm long and 25-40 mm wide, vestite in varying degree, but tending to be glabrate, lobes subulate-acuminate, 10-15 mm long; slender fruiting pedicels (10-) 20-30 (-80) mm long, usually reflexed; berry 1-2 cm in diameter, spheric to spheric-oblong.

Physalis maxima is characterized by its large fruiting calyces, long pedicels, white corollas, long, narrow, attenuate calyx lobes, and long hairs, especially on calyces, pedicels, petioles and upper stem. However, all these characteristics are variable, most particularly length of pedicels and calyx lobes, and the presence of long hairs. As the calyx lobes and pedicels become shorter, and the long hairs disappear, the plants approach those referred to *P. nican-droides* var. *attenuata*.

The material in the Sloane Herbarium of the British Museum has only a few scattered long hairs. HS 146 15c (lower right) has one fruiting calyx 55 mm long and 40 mm

wide and another 55 mm long and 38 mm wide; flowering pedicels are 20-25 mm long; a calyx, just after the corolla has fallen, is 7 mm long with very narrow calyx lobes 5 mm long; fruiting pedicels are 22 mm long. HS 294 53 has flowering pedicels 25-40 mm long; a young fruit has pedicels 50 mm long; anthers yellow, 3 mm long.

Neither of these, nor another, HS 296 7, appears to be the same as the one photographed as The Bailey Hortorium negative no. 5097, labelled "Type" with the annotation that the pasted strip below the specimen is in Miller's hand, and that on the reverse Solander pencilled "E. Vera Cruz, Houstoun, 1730".

P. maxima has not been recognized as a part of the Mexican Flora since Miller originally described it from the Houstoun Vera Cruz collections. Most of the material seen has either been unnamed, or has been referred to *P. nican-droides*.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: Cape Region, Oct. 18, 1902, *Brandegge s. n.* (UC); CHIAPAS: Hacienda Monserrate, Sept. 1926, *Purpus 9262* (UC); CHIHUAHUA: milpa margin, LaCienegita, Río Mayo, Sept. 10, 1936, *Gentry 2632* (F, GH, UC, US); COLIMA: subshrub over 1 meter high, alluvial plain, 18 km s of Manzanillo, Sept. 9, 1935, *West 3531* (GH, UC); GUERRERO: llano, Santa Barbara, Coyuca, Sept. 30, 1935, *Hinton 8503* (BM, F, GH, MIVB, NY, UC); Acapulco, Aug. 1866, *Thiebaut 1098* (P); JALISCO: along dry ditch in forest, 10-16 miles ne of Autlan, Oct. 2, 1960, *McVaugh 19767* (MICH); MEXICO: Rincon del Carmen, Sept. 16, 1932, *Hinton 1740* (F); MICHOACÁN: Barranca de Río Cancita, 9 miles se of Apatzingan, Sept. 18, 1958, *McVaugh 17981* (MICH, OKLA); MORELOS: near Yautepec, Aug. 27, 1903, *Rose & Painter 6583* (US); NAYARIT: Maria Madre, Tres Marias Islands, Oct. 21, 1925, *Ferris 5582* (US); roadside in semi-deciduous tropical forest on seaward—facing mountainsides, 12-13 miles s of Las Varas, Sept. 20, 1960, *McVaugh 19226* (MICH, OKLA); OAXACA: valley of Oaxaca, July 14, 1897, *Pringle 7474* (GH, US, VT); SINALOA: Culiacán, Sept. 19, 1904, *Brandegge s. n.* (UC); sandy soil along river near Fuerte, Mar. 7, 1910, *Rose et al 13576* (US); SONORA: Sierra de Alamos, Mar. 18, 1910, *Rose et al 13059* (NY, US); VERACRUZ, *Houston s. n.* (Photo: MICH, NY); YUCATAN: 1917-1921, *Gaumer 24310* (F, GH); ZACATECAS: pastured hills 5 miles s of Jalpa, Aug. 30, 1960, *McVaugh 18508* (MICH). COSTA RICA: Cartago, Nov. 1887, *Cooper 6002* (US). GUATEMALA: dry slopes on hill bordering Laga Retana, Dept.

Jutiapa, Nov. 26, 1939, *Steyermark 31975* (F). HONDURAS: sandbar along Río Chiquito, Comayagua, Mar. 12-23, 1947, *Standley et al 5956* (F); Quebrada de Santa Clara ene of El Zamorano, Aug. 6, 1949, *Standley 22280* (F); moist thicket, vicinity of Tegucigalpa, Oct. 7, 1949 (F). NICARAGUA: near shore of Lake Nejapa, near Managua, *Maxon et al 7560* (US); vicinity of Chichigalpa, July 12, 1947, *Standley 11346* (F).

64. *Physalis nicandroides* Schlechtendal, *Linnaea* 19: 311. 1846.

Annual, 1-2 meters tall, branched above; stems, petioles and pedicels viscid-pubescent with short, spreading, jointed hairs 0.3-0.8 mm long, some of which may be capitate-glandular; leaf blades ovate, often broadly so, more hairy below than above, veins of the lower surface often appressed-hairy, margins coarsely and irregularly angulate-sinuate-dentate, bases unequal, sometimes joining the petiole 1 cm higher on one side than on the other; principal leaves 6-12 cm long and 5-10 cm wide on petioles 2-4 cm long; flowering calyx 5-7 mm long, divided into subulate-acuminate lobes 3-4 mm long, pedicels 2-3 mm long; corolla white, greenish-white or slightly yellowish, maculate, but often faded, or indistinct, 4-8 mm long and 6-8 mm wide, tube hairy within; anthers blue tinged or faded to yellowish, 1.5-2 mm long, on filaments 2-2.5 mm long; fruiting calyx strongly 5-angled, 30-45 mm long and 23-40 mm wide, the body nearly as broad as long, somewhat hairy, but tending to be glabrate, subulate-acuminate lobes 10-15 mm long; fruiting pedicels 5-25 mm long, reflexed; the dry, thin-walled berry nearly spheric, 12-22 mm in diameter, sessile on the invaginated base of the calyx.

64a. var. *nicandroides*

Fruiting pedicels short and thick, 5-10 (-13) mm long and (1-) 1.5-2 mm thick.

SELECTED COLLECTIONS. MEXICO: DURANGO: Durango, Nov. 1896, *Palmer 914* (GH, UC, US); GUANAJUATO: near Dolores Hidalgo, Aug. 10, 1947, *Kenoyer 1925* (GH); JALISCO: abundant, Cuesta de San Marcos, 15 km sse of Actlan de Juarez, Nov. 7, 1959, *McVaugh & Koelz 342* (MICH, OKLA); low ground near Lake Chapala, 2 miles w of Tizapan, Aug. 18, 1961, *Waterfall 16394* (F, OKLA, S, US); MEXICO: Luvianos, Temascaltepec, Aug. 26, 1932, *Hinton 4529* (US); MICHOACAN: Morélia, Nov. 1912, *Arsène 8576* (BM, F, GH, NY, US); NAYARIT: Tepic, Jan. 5 to Feb. 6, 1892, *Palmer 2035* (GH, US); OAXACA: suburbs of Oaxaca, Oct. 1, 1894, *Smith 708* (F, UC, US); SAN LUIS POTOSI: hill 20 miles s of intersection of Highways 80 & 57, 64 miles ne of San Luis Potosí, Aug. 20, 1959, *Waterfall 15712* (BM, F, GH, MICH, NY, OKLA, P, SMU, UC); SINALOA: in 1927, *Ortega 6694* (F); VERACRUZ: in 1855, *Muller 564* (NY); YUCATAN: Common, Izamal, *Gaumer 1446* (F, GH, US); LOCALITY UNDETERMINED: Hacienda de la Laguna, Sept. 1828, *Schiede 606* (HAL: Type). COSTA RICA: forest,

Santa Maria de Dota, Dec. 26, 1925, *Standley & Valerio 43321* (US). GUATEMALA: Guatemala, in 1939, *Aguilar 141* (F); near Lake Retana, Oct. 10, 1944, *Melhus & Goodman 3784* (F). HONDURAS: brushy bank, Tegucigalpa, Sept. 6, 1951, *Standley 28697a* (F); El Banco, Comayagua, Sept. 29, 1951, *Williams 18335* (F, US).

64b. var. *attenuata* Waterfall, var. nov.

Pedicellis fructiferis tenuibus, 10-25 mm longis, plerumque 0.5- 1.0 mm latis.

SELECTED COLLECTIONS. MEXICO: BAJA CALIFORNIA: Todos Santos, Oct. 4, 1889, *Brandegge s.n.* (UC); CHIHUAHUA: southwestern Chihuahua, in 1885, *Palmer 226* (GH, NY, US); GUERRERO: Ilano, Coyuco, July 10, 1935, *Hinton 8035* (US); MORELOS: near Cuernavaca, July 29, 1906, *Pringle 13776* (GH, MICH, OKLA, US, VT); NAYARIT: precipitous mountainside in forest, 7-8 miles w of Mazatan, Sept. 14, 1960, *Mc-Vaugh 19027* (MICH); OAXACA: Coyula, Aug. 13, 1895, *Smith 616* (GH); TAMAULIPAS: Victoria, in 1907, *Palmer 240* (GH). COSTA RICA: La Balsa & Cateratas de San Ramon, Alajuela, Oct. 25, 1925, *Brenes 4550* (NY); San Jose, Aug. 1932, *Valerio 225* (F). GUATEMALA: brushy rocky slope, between Zacapa and Chiquimula, Oct. 9, 1940, *Standley 73840* (F); wet thicket, e of Cuilapa, Nov. 25, 1940, *Standley 78317* (F). HONDURAS: Geguare, Morazan, Aug. 1934, *Rodriguez 319* (F); moist thicket near Tegucigalpa, Oct. 7, 1949, *Standley 24120* (F, US).

Representatives of this taxon are not frequently collected in Mexico, the cited collections being the only ones seen from each of the Mexican states. It is more frequent in Central America.

65. *Physalis cordata* Miller, Gardener's Dictionary, ed 8, *Physalis* 14. 1768.

Annual, erect to sometimes decumbent, 15-80 cm long, appearing glabrous, but sparse, very short, antrorse trichomes usually present, rarely with a few long hairs, leaf blades ovate, or rarely broader, often acuminate apically and inequilateral basally, margins several-toothed; principal blades 3-8 cm long and 2.5-8 cm wide on petioles 3-9 cm long; flowering calyx 5-6 mm long, divided about half way into narrow acuminate segments, pedicels 4-10 cm long; corolla yellowish, maculate, hairy in the throat, 5-10 mm long and 9-22 mm wide when fully expanded; anthers bluish or greenish-blue, 1.8-3 mm long, on slightly to densely hairy filaments of about the same length; fruiting calyx 5-angled, often somewhat turbinate, cordate-based, glabrous, 25-43 mm long and 20-25 mm wide, the teeth narrow, acuminate, 7-10 mm long, sometimes somewhat porrect; berry nearly spheric, 7-15 mm in diameter; fruiting pedicels 10-25 mm long.

P. cordata is another of Miller's species not recognized in

the American flora since its description based on Houston's Vera Cruz collections.

Much of this material has been labelled *P. turbinata* in herbaria, but it is not that species as here interpreted. See discussion under *P. turbinata*.

A few sheets belonging to this species-concept were seen by the author in the preparation of his earlier study of *Physalis* (Waterfall, 1958), and in making subsequent identifications. They were referred by him to *P. pubescens* var. *glabra* (Michx.) Waterfall, based on *P. obscura* Michx. var. *glabra* Michx. The TYPE, studied in Paris in August, 1965, is on a small, pasted-on square of paper in the lower left hand side of a sheet, the remainder of which is var. *viscido-pubescens* Michx., i.e., *P. pubescens* L. The type of var. *glabra* represents a few-haired extreme of *P. pubescens*, differing only in its degree of hairiness. It has an obviously hairy, short-toothed fruiting calyx on pedicels 5-8 mm long not a glabrous, long-toothed fruiting calyx on pedicels usually 15-25 mm long, or longer, as does *P. cordata*.

In the Sloane Herbarium of the British Museum of Natural History in London is preserved the Houston material from Vera Cruz on which Philip Miller based his *P. cordata*. It has the characteristic fruiting calyces, long fruiting peduncles, and long petioles of this species-concept, as is well-illustrated by a photograph, from negative 5099, in the herbarium of the Bailey Hortorium.

SELECTED COLLECTIONS. MEXICO: CHIAPAS: Esperanza, Esquintla, Apr. 13, 1947, *Matuda 16489* (F); GUERRERO: Acapulco, March 1895, *Palmer 510* (GH); JALISCO: coastal plain, 4 miles n of Bahia Navidad, Nov. 1960, *McVaugh 20843* (MICH, OKLA); NAYARIT: roadside and thickets between banana plantations, 15 km se of San Blas, Aug. 25, 1959, *Feddema 958* (OKLA); OAXACA: *Galeotti 1236* (P); SINALOA: Sante Fe, Dec. 1921, *Ortega 4384* (US); VERACRUZ: negative 5089 of the Bailey Hortorium photographs of Philip Miller collections, is probably of one of the Houston collections, as is the specimen in the Sloane Herbarium of the British Museum labelled HS 294 54, listed in Ray's Hist. 356 as "Alkekengi americanum anum lamiifolia fructu cordato, Houst."; YUCATAN: Izamal, *Gaumer 23170* (F). COSTA RICA: near Port Limon, May 27, 1911, *Pittier 3637* (NY, US); near Turrialba, Cartago, Nov. 16, 1953, *Heiser 3735* (F).

EL SALVADOR: Laguna de Maquigue, La Union, Feb. 18, 1922, *Standley 20958* (GH, US); between San Martin and Laguna de Ilopango, San Salvador, Apr. 1, 1922, *Standley 22560* (GH, US). GUATEMALA: Quiriga, Izabal, May 15, 1922, *Standley 24073* (GH, US); lower slopes of Volcán de Zunil, Feb. 3, 1941, *Standley 85842* (F). HONDURAS: wooded swamp, near Juticalpa, Olancho, Mar. 5, 1949, *Standley 17709* (F); Lancetilla Valley near Tela, Atlantida, *Standley 55683* (F, US). NICARAGUA: moist thicket, Chichigalpa, July 12, 1947, *Standley 11410* (F). PANAMA: wooded hillside near Catival, Colon, Jan. 9, 1924, *Standley 30236*. BAHAMAS: Spring Point, Acklin's Island, Jan. 8, 1906, *Brace 4256* (NY). BERMUDA: *Brown & Britton 386* (GH, NY, UC). CUBA: south of Providencia, Aug. 19, 1930, *Leon 14653* (GH, NY); near Cienfuegos, Jan. 25, 1903, *Pringle 40* (VT). CURACAO: Patrick, Mar. 20, 1913, *Britton & Shafer 3072* (NY). DOMINICAN REPUBLIC: Santo Domingo (Ciudad Trujillo), Feb. 24, 1930, *Ekman 14329* (GH). GRENADA: Aug. 16, 1905, *Broadway s.n.* (GH). GUADELOUPE: in 1898, *Duss 3984* (NY). HAITI: south of Jean Rabel, Jan. 27, 1929, *Leonard 12695* (NY). JAMAICA: Windsor Estate, Aug. 26, 1956, *Proctor 15689* (GH). PUERTO RICO: near Catano, Feb. 14, 1927, *Britton 8832* (NY). TORTOLA: *Fishlock 299* (GH). VIRGIN GORDA: Jan. 6, 1919, *Fishlock 200* (NY).

66. *Physalis porrecta* Waterfall, sp. nov.

Planta annua, 0.4-1.3 m alta; caulibus sparse et inaequale vestitis; trichomatibus articulatis, plus minusve planis; foliis ovatis, marginibus inaequaliter magnodentatis vel integerrimis, principalibus 5-11 cm longis et 4-7 cm latis, petiolis (2-) 3-7 cm longis; calycibus floriferis 5-7 mm longis, lobis 1.5-4 mm longis anguste attenuatis, pedicellis 4-5 mm longis; corollis 7-10 mm longis et 12-15 mm latis, maculis pallido-fulvis, marginibus diffusis; antheris luteis vel violaceis, 1.8-2.3 mm longis, filamentis 2-4 mm longis; calycibus fructiferis glabris, pentangulatis, 3-5 cm longis et 2.2-3 cm latis, lobis porrectis, rostris 7-13 mm longis; pedicellis fructiferis 6-15 mm longis; baccis 12-15 mm latis.

TYPE: *Alexander F. Skutch 2931* (US), edge of forest, vicinity of El General, Prov. San Jose, alt. 1160 meters, COSTA RICA, Nov. 1936; Isotypes: (GH, NY).

SELECTED COLLECTIONS. MEXICO: OAXACA: vicinity of Cafetal Concordia, April 1, 1933, *Morton & Makrinius 2556* (US). COSTA RICA: *Skutch 2931*, type, cited above; moist forest, El Munceo, Río Navarro, Provincia de Cartago, Mar. 6, 1926, *Standley & Valerio 51093* (US). GUATEMALA: clearing in forest, Volcan Zunil, Dept. Quezaltenango, Aug. 7, 1934, *Skutch 970* (US); barranca above Duenas, Dept. Sacatepequez, Jan. 21, 1939, *Standley 63252* (F, US); bushy rocky slope, near divide on road from Zacapa to Chiquimula, Oct. 9, 1940, *Standley 73738* (F).

P. porrecta is characterized by its usually abruptly beaked fruiting calyx, its yellowish corollas varying from immaculate to obviously marked, but usually inconspicuously so, with brownish spots, their margins often diffused, anthers varying from yellow to bluish or greenish-blue, and with vestiture usually more abundant on one side of the stem than on the other, branches and petioles sometimes with the inner side vestite, and the outer side glabrous, or nearly so.

67. *Physalis latiphysa* Waterfall, *Rhodora* 60:169. 1958.

Annual 15-45 cm tall, branched, more or less villous or glandular-villous, leaves ovate, thin, entire to few-toothed, acuminate, principal ones 5-7 cm long and 3-5 cm wide on petioles 1.5-7 cm long; flowering calyces 3-4 mm long, divided half way into lanceolate or narrowly lanceolate lobes, on pedicels 3-8 mm long; corollas yellowish with small, dark maculations, 3-4 mm long; fruiting calyces strongly 5-angled, sparsely appressed-hairy, 2.5-4 cm long and (2.5-) 3-4 cm wide with linear-subulate lobes 7-10 mm long extending 5-7 mm beyond the calyx-body; fruiting pedicels 1-1.5 cm long; berry 13-17 mm in diameter.

SPECIMENS EXAMINED. MEXICO: SONORA: between Tepapa and Batuc, Sept. 28, 1934, *Wiggins 7503* (MICH, US).

The principal range of this species is in southern Arizona (Waterfall, 1958), but more material should be found in northern Sonora.

68. *Physalis ignota* Britton, *Mem. Torr. Bot. Club* 16:100-101. 1920; *P. pentagona* Blake, *Contr. U.S. Natl. Herb.* 24:20-21. 1922.

Erect annual, 10 cm to 1 meter tall, usually densely covered with short, more or less glutinous, nearly straight to antrorsely curled, multicellular hairs; leaf blades ovate to rhombic-ovate, sometimes acuminate, margins entire to repand-dentate, surfaces with vestiture similar to that of the stem, but more sparse, or nearly glabrous with concentrations along the midrib and principal veins, principal blades 4-12 cm long and 3-8 cm wide on petioles 2-7 cm long; flowering calyx oblongish to campanulate, 5-8 mm long and 3-6 mm wide at base of lobes, upper one-fourth to two-thirds divided into ovate-lanceolate to narrowly lanceolate-attenuate lobes; flowering pedicels 3-7 mm long; corollas yellowish, immaculate, campanulate, 6-10 mm long and 4-10 mm wide, sparsely hairy in the throat; anthers yellow or bluish tinged, oblong, 2-2.5 mm long, on filaments of about equal length; fruiting calyces strongly 5-angled, usually densely and evenly covered with short, erect, jointed hairs; fruiting pedicels 7-15 mm long; berry spheric to ovoid, 9-15 mm long, capitate-glandular, as is the inside of the fruiting calyx; gynophore 1-2 mm long.

SELECTED COLLECTIONS. COSTA RICA: Las Canas, Guanacaste, Nov. 12, 1953, *Heiser 3722* (F). EL SALVADOR: sand along river, San Miguel, Feb. 24, 1922, *Standley 21092* (GH, NY, US); sand along stream, San Salvador, Mar. 30, 1922, *Standley 23156* (GH, US, NY). GUATEMALA: dry riverbed, Los Amates, Izabel, May 9, 1919, *Blake 7313* (Type collection of *P. pentagona* Blake: US); sand bars, Los Amates, May 24, 1922, *Standley 24418* (GH, NY, US); gravelly slope, Jutiapa, Oct. 24, 1940, *Standley 75054* (F); Río Selguapa, Comayagua, Mar. 21, 1945, *Rodriguez 2530* (F); weedy field, El Zamorano, Morazan, July 26, 1949, *Standley 21740* (F). NICARAGUA: summit of Sierra de Managua, May 14, 1947, *Standley 8682* (F); wet thicket, Chichigalpa, July 12, 1947, *Standley 11155* (F). PANAMA: San Carlos, Dec. 5, 1938, *Allen 1136* (GH, NY, US). SAN SALVADOR: Aug. 1922, *Calderon 1134* (US). CUBA: Cienfuegos, Oct. 27, 1928, *Jack 6566* (NY); Playa de Mariano Habana, Nov. 28, 1915, *Leon 6864* (NY); Nuevitas, Mar. 31, 1909, *Shafer 1127* (NY).

TO BE CONTINUED

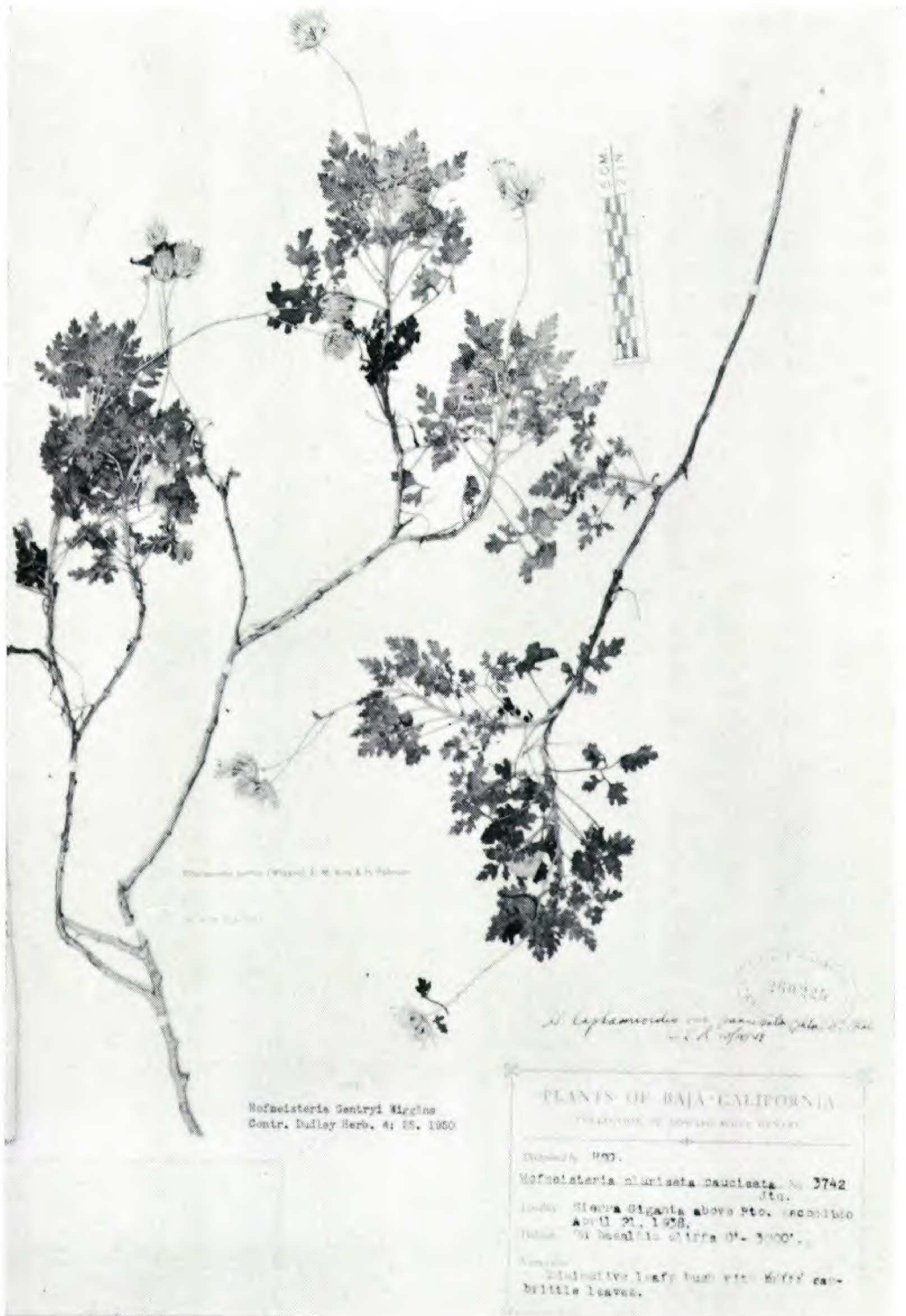


Plate 1338. *Pleurocoronis gentryi* Holotype (DS) Gentry 3472. The above plate replaces the one incorrectly shown in Rhodora Vol. 69 on p. 37.